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CREDIT ANALYSIS

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TO

D. M. S.

PREFACE

THIS book is written for bank and mercantile credit men, business executives, and students and teachers of commercial credit. The complete analysis of credit risks is a vast and complicated subject. Its manifold aspects require a thorough knowledge of all the social sciences. The author has therefore aimed, by means of a study of reports on creditors' experience and the analysis of financial statements, to restrict this discussion to a presentation and illustration of the economic and business basis underlying the assumption of a credit risk.

Many books, published on this subject, follow a rather conventional scheme, covering the general factors in credit risks, the sources of credit information, collection procedure, and the handling of bad debts and bankruptcy procedure. The author has endeavored to emphasize, in contrast to the above materials, the theory underlying, as well as the practices involved in, the analysis of credit interchange experience and financial statements, for the purpose of reaching judgments on credit risks. In addition, he believes that any judgment as to the advisability of assuming a risk must proceed from a thorough understanding of the factors influencing it, namely, first, the relation of credit risks to both general and specific business and economic factors, including the business cycle; second, the symptoms of credit worth as displayed in the credit interchange reports and in the financial statements of the business enterprise itself—these symptoms being a reflection both of the trend of general business conditions with the relation of the industry thereto and of the individual enterprise's reaction in business and financial policies; and third, the importance to credit of working capital management and business budgeting, because of the forecasting problem involved in the assumption of every credit risk.

The author wishes to acknowledge his debt to Mr. Alexander Wall, Robert Morris Associates, Lansdowne, Pa., to

whom he owes his interest in this subject. He is also greatly indebted to Dr. John Whyte, formerly of the National Association of Credit Men; Dr. Frank A. Fall, Director of Education and Research, National Association of Credit Men; and Dr. C. W. Gerstenberg, author of "Financial Organization and Management of Business," and other well-known business books, all of whom have rendered valuable assistance in giving criticisms on the manuscript. The sympathetic and patient service performed by Denise M. Schluter, in the revision of content as well as form, entitles her, really, to co-authorship in this work.

W. C. SCHLUTER

CONTENTS

CHAPTER PAGE

I—THE APPROACH TO CREDIT RISKS 3

Problem of credit granting; General influences on credit; Nature of credit risks; Comparison of mercantile and bank credit risks; Similarities, Differences; Classes of credit operations; Commercial credit operations; Investment credit operations; Banking versus bank credit; Overlapping of credit operations; Credit risks related to stage of production process; Credit instruments and the risk; Elements in credit risks; Ability to pay; Willingness to pay; Manner and time of payment; Sources of credit information; Investigation procedure; Classification of sources; Banks; Commercial paper houses; Creditors' experience; Mercantile agencies; Miscellaneous sources; Sources of credit information as related to factors in the risk; Customers' relations to bank and mercantile houses.

II—INTERCHANGE OF CREDITORS' EXPERIENCE . 27

Selection of sources for credit information; The problem of investigating credit risks; Survey of sources of information from creditors; Methods of obtaining credit experience; Direct and indirect methods; Information obtained by direct interview; Difficulties in obtaining creditors' names; Duplication in direct methods; Indirect approach in obtaining creditors' experience; Credit bureau interchange service; Credit bureaus; Credit clearing house; Local "independent" credit and trade bureaus; Advantages of interchange of credit experience; Practical illustrations of credit interchange reports analyzed; Case I; Analysis of Plumbing Supply Co.; Economic aspects of interchange replies; Analysis of several headings in reports; Analysis of related replies in combination; Illustration of analysis of related replies in combination; Conclusions reached in Case I; Analysis of Case II; Report on a hardware company; Analysis of Case III; Report on a motor company; Significance of business cycle; Analysis of Case IV; Report on a small manufacturer; Indeterminateness of analysis without taking into account the business cycle; Conclusions pointing to necessity of comparative analysis of interchange reports.

III—COMPARATIVE ANALYSIS OF CREDIT INTERCHANGE REPORTS 68

Reasons for a comparative analysis of credit reports; Reasons why credit men often fail to do so; Limitations on single reports for appraisal of credit risks; Credit risks projected into the future; Credit risks and the business cycle; Possibilities of making a comparative analysis of credit interchange reports; All conditions can be fulfilled; Other comparisons of credit

CHAPTER PAGE

reports; Sectional and individual differences among enterprises in same industry; Comparative analysis of credit interchange reports; All conditions can be fulfilled; Other comparisons of credit reports; Sectional and individual differences among enterprises in same industry; Comparative analysis of credit interchange reports illustrated; Business conditions surrounding the risk; Reports of Jones Company presented; Indexes of business activity as basis of forecasting; Information presented as illustrative of supporting credit analysis; Trend of credit worth of company determined by analysis of reports in light of the business cycle; Conclusions on risk; Steps in appraising credit risks by a complete analysis of credit interchange reports.

IV—CREDIT RISKS AND THE BUSINESS CYCLE . . 85

The business cycle; Relation of credit worth to the business cycle; Depression—Business and economic factors predicating a revival in business activity; Credit factors in a depression; Business revival—Business and economic factors predicating prosperity; Credit factors in business revivals; Prosperity—Business and economic factors predicating crisis and liquidation; Nature of cumulation of prosperity; Credit factors in the early phases of prosperity; Credit factors in later prosperity; Significance of credit policies at closing periods of prosperity; Liquidation—Business and economic factors predicating a depression; Credit factors in periods of crisis and liquidations; Credit policies suggested; Credit worth as affected by the relation of the industry cycle to the general business cycle; Unevenness of influence of business cycle on the individual industries; Different variations in prices, production and demand; Indexes of business activity serviceable for credit analysis; Appendix—Statistics demonstrating internal cycle and credit worth of representative concerns.

V—NEGLECTED ELEMENTS IN CREDIT 115

Interrelation of business enterprises; Influences of creditor policies on debtor credit worth; Creditor's influences in mercantile credit; Overselling the buyer; Terms of sale as an influence; Too liberal or too rigid terms; Influence of creditor's price policy; Influence of bank policy on debtor concerns; Size of lines of credit; Time extended; Control over use of borrowed funds; Rates of interest; Question of capitalization in borrower's business; Influence of creditor's financial position on debtor's credit worth; Production plans and capital position; Effect of insecure financial position on debtor; Economic factors forcing unfavorable influences on debtor; Differences in rate of turnover; Distances covered by shipments; Territorial differences in capital supply; How creditors influence debtors in periods of prosperity; Liberal use of credit; "Cash" buying; Discretionary credit policies in periods of expansion; Creditor preparations to influence debtor in periods of depression; Policies to be followed in previous period of boom; Selecting the credit risks; Aiding the debtor in bad times; Summary of influences exerted by creditor on debtor.

VI—FINANCIAL STATEMENTS IN CREDIT ANALYSIS 131

Significance of financial statements; Accounting as one phase of statistical control and of credit information; Other kinds

CHAPTER PAGE

of business data; Three purposes served by financial statements; Accounting routine; Statements serving the business executives; Statements used with credit applications; Nature of the valuation process underlying statement items; Other credit data concerning a business; Form of financial statements for credit applications; Balance sheet; Income statement; Limitations of statement analysis without a statistical method; Reasons for proportional analysis; Development of the current ratio; Results of its use; Present tendencies in statement analysis; Statement of Mr. Alexander Wall; Credit ratios that have a practical significance; Differences between "financial," "operating" ratios and credit ratios; Five main credit factors and their significance; Mechanical technique in calculating ratios; Obtaining the statement; Standard forms prescribed; Grouping and totaling form; Meaning of credit ratio or proportion; Graphic illustration of combination of changes in numerators and denominators of proportions; Supplementary aids to ratio analysis; Index number of individual items; Illustration of its construction; More simple and efficient method of measuring changes in statement items; Illustration of 100 per cent statement; Construction of index of individual ratios; Graphic illustrations; Summary of steps in ratio construction and in their analyses.

VII—CREDIT RATIO ANALYSIS OF THE FIRST FACTOR IN CREDIT—THE SOURCE AND NATURE OF CAPITAL EMPLOYED IN THE BUSINESS . . 164

Meaning of the factor; Its threefold aspect; Proportions which are indicative of the credit significance of this factor; Credit ratios as measures of sources and nature of the capital employed; Net worth; Total debt ratio; Manner in which it is computed; Selection and meaning of items included; Interpretation of ratio and changes in the ratio; Surplus; Net worth ratio; Its meaning and manner of construction; Current Debt; Total Debt ratio; Items included in that proportion; Reasons for changes occurring in ratio; Supplementary ratio under the first credit factor; Current Debt; Net Worth and Net Worth: Funded Debt ratios; Manner of computation and significance of each; Combination credit ratio analysis; Steps in the analysis; Interpretation of groups of ratios together; Practical ratio analysis of credit cases; Types of firms selected at random; Statement items used in calculating credit ratios and credit ratios of a department store; Analysis of credit ratio of department store dealing with source of capital; Statement, combined items, and credit ratio of wholesale hardware concern; Analyses of ratios of hardware concern; Statement, combined items, and credit ratios of wholesale grocery concern; Analysis of its credit ratios relating to sources of capital; Statement, combined items, and credit ratios of a shoe manufacturer; Analysis of its credit ratios indicating the sources of capital; Statement, combined items, and credit ratio of silk manufacturing concern; Analysis of its source of capital; Statement, combined items, and credit ratios of two specialty metal manufacturers; Analysis of their sources of capital; Recapitulation of standing of companies.

CHAPTER PAGE

VIII—CREDIT RATIO ANALYSIS OF THE SECOND FACTOR IN CREDIT—THE USES MADE OF CAPITAL INVESTED AND IN ITS DISTRIBUTION AMONG THE ASSETS 217

Meaning of factor; Credit implications of uses of capital; Meaning of "ability" in credit; Analysis of proportions under this factor; Credit ratios as measures of uses and distribution of capital; Fixed Assets: Total Capital, Current Assets: Total Capital and Other Assets; Total Capital ratios; Methods of calculating ratios hereunder; Selection of items to be included; Interpretation and meaning of each item; Illustration of imputing meaning to above credit ratios; Combination analysis of first eight ratios; Illustrative cases analyzed; Practical ratio analysis of credit cases; Credit ratios of department store relating to uses of capital; Analysis of ratios and conclusions; Credit ratios of wholesale hardware concern; Analysis of ratios; Credit ratios of wholesale grocery concern; Analysis of ratios; Credit ratios on uses of capital of shoe manufacturing concern; Analysis of ratios; Credit ratios of silk manufacturer; Credit ratios analyzed; Credit ratios of specialty metal manufacturing concerns; Uses of capital analyzed; Recapitulation of results.

IX—CREDIT RATIO ANALYSIS OF THE THIRD FACTOR IN CREDIT—THE SUPPLY AND POSITION OF WORKING CAPITAL 241

Significance of this factor in credit analysis; Four credit aspects of working capital; Factors that make for differences in working capital requirements among enterprises; What is meant by turnover; Distinctions between "averages" of working capital dollar; Credit ratios as measures of working capital requirements and control; Current Assets: Current Liabilities; Make-up of items going into the proportions; Interpretation of items included; How to handle the inventory item; Its relation to the business cycle; Inventory adjustment for purposes of credit analysis; Handling the items of receivables and cash; Net Working Capital: Fixed Assets ratio; Method of calculation; Meaning of the ratio; Causes of changes; Turnover ratios; Breaking up the working capital turnover into three phases; Net Sales: Current Assets; Net Sales: Receivables; Net Sales: Merchandise, and Merchandise: Receivables ratio; Method of deriving ratios; Meaning of Net Sales: Current Assets ratio; Meaning of other turnover ratios; Significance of their combined analysis; Practical ratio analysis of credit cases; Recapitulation of proportions and ratios; Credit ratios of department store relating to supply and position of working capital; Analysis of ratios and conclusions; Credit ratios of wholesale hardware company; Analysis of ratios; Credit ratios of wholesale grocery concern; Working capital position studied; Credit ratios of shoe manufacturing concern; Ratios analyzed; Credit ratios of silk concern and their analysis; Credit ratio of specialty metal manufacturing companies; Analysis of these ratios; Recapitulation of conclusions reached.

CHAPTER PAGE

X—CREDIT RATIO ANALYSIS OF THE FOURTH FACTOR IN CREDIT—THE POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS . . . 279

Credit risks and profits; What is meant by productivity in credit analysis; Indexes reflecting past earnings compared with forward-looking income indicators; Peculiar twist in meaning of productivity in credit; Proportions sought to indicate probable future earning capacity; Credit ratios as measures or indicators of capital productivity; Net Earnings: Net Worth ratio; Index of past earnings; Jumping off place for judging future earnings; Inventory; Fixed Assets ratio; Net Sales: Current Assets ratio; Ratios indicating potential productivity; Breaking up of Inventory: Fixed Assets ratio into Raw Materials and Supplies: Fixed Assets and unfinished and finished Goods; Fixed Assets ratios; Meaning to be imputed to ratio; Demonstration of meaning by illustrative case; Steps in analysis; Practical ratio analysis of credit cases; Credit ratios of potential productivity of capital and assets of department stores; Ratio analysis; Credit ratios of wholesale hardware concern; Analysis of ratios; Credit ratios of wholesale grocery concern; Ratios analyzed; Ratios of shoe manufacturing concern and analysis; Ratios and analyses of ratios of silk manufacturer; Credit ratios of specialty metal manufacturing companies; Analysis of ratios; Recapitulation of conclusions for each case.

XI—CREDIT RATIO ANALYSIS OF THE FIFTH FACTOR IN CREDIT—THE RATE OF FIXED EXPANSION 302

Significant features of a concern's growth; Credit man's point of view on expansion; Difficulties in determining correct rate of expansion; Procedure to overcome difficulties in measuring expansion; Meaning of proportions in connection with this factor; Reasons for selecting ratio of normal net sales to fixed assets; How to find the line of normal growth; Suggestion of both scientific and mechanical methods; Obtaining of capital for purposes of expansion; Effects of expansion on a firm's financial structure; Five primary symptoms stated; Credit ratios as measures of fixed expansion and its effects; Normal net Sales; Fixed Assets Ratio; Method of finding ratios; Illustration of interpretation; Using of other ratios in combination; Examples of analysis; Conclusions of analysis; Practical ratio analysis of credit cases; Rate of expansion of department store; Ratios presented; Conclusions on expansion; Rate of expansion of wholesale concerns; Ratios analyzed; Comparison made with "standards" and conclusions; Rate of expansion of the shoe manufacturing concern; Ratios and analysis; Ratio of expansion of silk manufacturing concern; Ratios presented and analyzed; Rate of expansion of specialty metal manufacturing concerns; Comparative study of two concerns; Recapitulation of conclusions.

XII—CREDIT ASPECTS OF THE MANAGEMENT OF WORKING CAPITAL 332

Meaning of net working capital; Sources of working capital; Analyzing of sources; Illustration of different position of

two companies in obtaining working capital; Costs and responsibilities connected with the methods of procuring working capital; Responsibility for payment related to control of funds used; Shifting between sources of credit; Costs an important consideration; Particular circumstances affecting choice of source; Variations in net working capital; Factors making for an increase or a decrease in net working capital; Why changes in amount of current assets and current liabilities do not accurately reflect changes in net working capital; Factors in the requirements of working capital; Separate meanings attributed to working capital; Calculating working capital requirements; Volume of business; Net terms of sales; Length of manufacturing period; Degree of equalization in production; Facilities for selling or discounting receivables; Proportion of owned to borrowed capital; Size of fixed charges; Method of determining the amount of working capital required; Calculating fixed charges; Calculating amount consumed by prime costs; Reasons for variations in prime costs; Relation of variations in prime costs to the various phases of business cycle; Procedure in determining factors in problem; Outline of factors in business cycle influencing prime costs; Use of working capital; Length of period of turnover; Determining factors; Spurious factors that obscure actual turnover rate; Disproportional rates and stocking up inventory; Features of a firm's activity through a business cycle; Principles of management of working capital; Why all working capital required is not owned; Practical demonstration; Calculating of safe and profitable proportion between borrowed and owned working capital; Determining the minimum need; Should be supplied by owner; Variations should be accounted for by reasonable proportion between invested earnings and borrowings.

XIII—CREDIT ANALYSIS AND PRINCIPLES OF BUDGETING 363

Relation of budgets to credit analysis; Value of budgeting to mercantile credits; Advantages of business budgeting to banks; Effects of budgeting on control of an enterprise; Data necessary for budgeting; Problem of budgetary control; Statements of H. Coonly of Walworth Company and Mr. Sanders; Data of adequate cost accounting system; Second factor in securing data for budgeting pertaining to business itself; Statistics on normal growth of the business; Data on concern's own business cycle; Measures of seasonal changes; Finding the rate of growth; How to obtain data on the firm's own cycle; Dennison's remarks on purchasing policies; Relating the data to general business conditions; Summary of data needed; Expansion budget; Alternative problems in when to expand; Sources of capital for expansion; Interrelation of expansion with current operation; Operating budget; Two distinct problems in operation; Inventory policy related to operating budget; Problem of estimating disbursements; Relating costs to volumes of purchase, output, stocks, and sales; Estimating disbursements; Sources of incomes; Factors in estimating income; Coördinating income and outgo; Departmentalization of budgets; Plan of Boston Chamber of Commerce.

XIV—INDICATORS OF COLLECTIONS 404

Types of collection indexes; General indexes of collection conditions; Construction of general indexes; Abstract problem of collections; Factors in income; Basis of expectation; Methods of payment; Nature of income; Basis of income expectancy; Methods illustrated; Analysis of income stream; Internal variables in income estimates; External variables in income estimates; Relation of general conditions to a firm's income; Practical construction of an income indicator; Cases numbers one and three; Cash terms and net terms only; Case number two; End-of-month terms; Case number four; Cash discount and net terms; Factors involved in the problem; Forecasting income; Coördination of outstandings with external collection and conditions; Sources of data; Outline of data required for estimating external influences on income.

INDEX 431

PART I

CREDIT ANALYSIS

CHAPTER I

THE APPROACH TO CREDIT RISKS

Problem of credit granting.—In common parlance, the credit man "grants" credit. It is popularly supposed that he extends some power to the buyer of goods or services on time, or to the borrower of funds. Let us guard ourselves against this conception of the work of the credit man and of the relationship between creditor and debtor. What the credit man actually does is to *accept* or *reject* credit. It is the *customer* who possesses, or does not possess, credit power or credit worth—the power to obtain goods, services, or money, with the promise to pay for the goods and services, or to repay the money at a certain time in the future. To determine whether the customer or applicant for "credit" has this power, to what degree he possesses it, and in what manner he seeks to use it is the work of the credit man. Here is the core of the problem of analyzing credit risks.

General influences on credit.—In the long run, especially, the belief that credit power resides in the buyer on time or in the borrower of funds seems sound. It is true that this power is subjected to stresses and strains over short intervals—stresses and strains arising from outside conditions that act upon the elements composing this inherent power to command goods, services, or money on time. These outside factors are the vicissitudes of changing business conditions, and the credit relationships that the debtor may assume. The first of these is exemplified in the various phases of the business cycle, and in the many disturbances to which a particular business is subjected from time to time. These vicissitudes affect the credit power of a concern through the changes they work on its physical and financial resources, bringing about, as they do,

uncertainties which make difficult that business forecasting which underlies all investment and business operations—an influence, the extent of which must, of course, be determined by management—the reaction in ability to adjust the internal affairs of the business to these changing conditions as they arise. The second of these outside factors that affect credit worth may be seen in the type of credit relationships that the debtor has incurred, or is about to incur. For example, if the seller were in a weak financial position and obliged to seek cash for his sales, the extent to which the customer's credit power receives recognition would be limited. If, on the other hand, the creditor were in a strong position, the debtor's credit worth would receive greater recognition; or the debtor might wish to exercise his credit power in a direction with the advisability of which the seller or bank might disagree. The customer might wish to buy too great a quantity of goods, or to borrow too much, or for precarious purposes; or the seller might question the resalability of certain goods in the hands of the customer; or the bank might be unwilling to lend for purposes of buying fixed assets, while perfectly willing to lend to a customer for the purchase of raw materials or for the requirements of the payroll.

We do not purpose to exhaust in this treatment the whole array of factors that affect credit power. These are too numerous even for mention and vary with particular credit risks. But the above discussion ought to aid at least in clarifying the mind of the reader as to what credit is, and to make it clear that it is the credit man's job to discover whether credit power exists in a customer and, once it is determined, to decide in what degree it is present, and how the customer seeks to use it.

Nature of credit risks.—In order properly to approach the problem of analyzing credit risks, the credit man should have clearly in mind just what constitutes a credit risk. He must consider the part played in the bargain by both creditor and debtor. As we have seen, the debtor possesses a certain power in a measurable degree, which he seeks to use in a definite way—in buying goods on time, or in borrowing funds for various purposes. The credit man is to pass judgment on this power, after investigation. The risk is then assumed or

rejected. If it is assumed, the customer is expected to meet the conditions of payment according to his promise. Right here is where the risk begins. The customer's promise implies that he believes that he can pay and will pay, at an agreed or understood time in the future.[1] From the standpoint of the seller or the bank, the risk is rooted in the credit investigation plus the credit man's judgment. As a tree trunk separates into branches so the risk separates into three questions: "Can he pay?" "Will he pay?" "When will he pay?" The fulfilled promise is the fruit. The risk is in waiting for this fruit. But the type of creditor and nature and position of the seller or lender determine the attitude toward the risk. In this respect, the points of view of the mercantile house and that of the bank might profitably be compared to discern similarities and differences.

Similarities.—In assuming credit risks, both types of enterprise would seek to protect similar interests.

Preserving liquidity of assets.—First, both the mercantilist and the banker look toward preserving the liquidity of their assets. Regular conversion of these assets into cash is highly important to both, facilitating, as it does, administrative control, by insuring readier adjustment to changing business conditions, and, consequently, a reduction of losses.

Safeguarding profits.—Second, their interests are more or less identical with regard to the security underneath their credits. Loans and receivables should bear an intrinsic value commensurate to the book value at which they are carried. The banker looks to the repayment of loans with which to meet the withdrawal of deposits (primarily demand deposits), while the mercantile house is solicitous to maintain a safe margin of current assets over current liabilities, these latter including its constantly recurring expenses. Bad-debt losses, excessive collection expenses, and loss of interest on working capital, tied up in "frozen" receivables, would cut deeply into the bank's profits from discounts, and into the mercantile house's net profits on sales.

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[1] This statement, of course, is not true of a customer who deliberately obtains goods or funds on time with the intent to defraud.

Similar clientele.—Third, the methods of analysis of credit risks by both may be very similar, because the type of customer is very much the same. The retailers to whom the wholesalers sell, or the wholesalers and retailers to whom the manufacturers sell, are the same business enterprises that constitute the major elements in a bank's clientele. Often identical factors in the respective risks are offered for their consideration.

Maturity of receivables.—Fourth, the time of payment by the debtor is equally significant to the bank and to the mercantilist. The time should be definite and not uncertain. Uncertainty is the Nemesis of business management and control. The determination of business policies and the formulation of plans are handicapped in proportion to the uncertainties that enter into the estimates of future returns. Outgo invariably precedes income, since investments must be undertaken and funds spent before those operations can be gotten under way or completed upon which the income of a firm is predicated.

Retaining customers.—Finally, both points of view regard the risks or debtors as customers permanently to be desired. The bank's clientele in borrowing operations is composed, naturally, of all its debtors, and that of the mercantile house, of that portion of its patrons to whom goods are sold on time. Banks as well as mercantile houses wish to expand business to the limit of safety, and, besides competition in the market, one of the chief elements limiting volume of business is the extent to which credit can safely be granted. In the case of mercantile concerns, this fact is adequately illustrated by the evident conflicts between credit men and salesmen. It is evident that, in these respects, the mercantile and banking points of view as to credit risks possess common elements.

Differences.—There are, however, differences between the two classes of creditors, as to motives and methods in assuming risks.

Business dissimilar.—It is the chief business of banking to make loans. As pointed out above, the deposit principle of banking implies that, in commercial banking, demand deposits received (especially, the primary or cash deposits) constitute the chief source of working capital with which a

bank operates or loans out; for it is the primary function of a bank to take deposits and make loans. On the other hand, the *raison d'etre* of a mercantile house is the buying and selling of goods, or, it may be, the fabrication and selling of goods. All or part of the goods may be sold on time. In actual practice, such sales are accompanied by what is known as "terms of sale" (such as, 2 per cent 10 days, net 60 days), stating the credit conditions of those sales. In this respect, the credit granting of mercantile concerns becomes an adjunct of selling, for the sale of goods might be preceded by an investigation and assumption of credit risk, or the risk might be assumed at the time of sale, as a matter of course. Naturally, the terms of sale invite inquiry into the credit standing of the customer, and are a necessary part of selling goods. The terms of sale, just as the terms of loans by banks, are subject to manifold conditions outside the elements making up specific credit risks.[2]

However, the chief point to remember is that in the case of a mercantile house the motive of assuming a credit risk and the method of credit analysis are related to the sale of goods, while in the case of a bank, since the primary function of banking is to make loans, the motive is much simpler, being the direct loaning of funds. However, more serious consequences may result if mistakes are made than is the case with a mercantile house, since a bank deals chiefly with money intrusted to it by the public.

Source of profits.—This brings us to the second difference, namely, that the chief source of banking profits is in discounts and from loans, while a mercantile house derives its profits chiefly from the sale of goods. Bad-debt losses and expenses for collection and for credit investigation constitute deductions necessary from gross profits and are common both to bank and to mercantile house, in so far as receivables are concerned. The mercantile house may suffer further deductions, owing to loss of interest on working capital tied up in receivables, making it necessary for this concern to borrow funds to meet current requirements, or to curtail operations,

[2] *Cf.* W. H. Steiner, "Mechanism of Commercial Credit," Chapters ii, iii; W. C. Schluter, "Factors Determining Terms of Sale," *University Journal of Business*, February, 1923, pp. 138-150.

that is, production or purchase of goods for resale. On the other hand, as long as a bank is assured of interest or discount, it may not lose in slow-paying loans, since it possesses no alternative uses for its funds except in other more profitable operations.

The bank, therefore, must be the more careful in assuming credit risks, because its chief motive in granting credit is to preserve profits, these being greater *in toto* per dollar of owned capital than that of the mercantile house, which, making its profits primarily by selling goods, although standing to lose more in case of bad risks and outstanding overdue accounts, reserves a larger profit per transaction. For example, on a $100 loan for a year, a bank obtains a gross profit of $5 if interest rates are at 5 per cent, while a mercantile house, as a rule, clears much more than $5 on a $100 sale, especially if we assume one turnover every year. This is a necessary provision, since both operating and administrative expenses are, as a rule, more variable and indeterminate for a mercantile house than for a bank. Again, a mercantile house invariably procures cash for part of its sales, and, therefore, stands to lose nothing from bad receivables, whereas the bank stands to lose on all its investments. Many other elements might be included in this comparison of profits, such as the risks attendant upon inventories of mercantile concerns, but we have been content to indicate the main differences.

Relations with customers.—There is a third difference to be found in the attitude of banks and mercantile establishments to their credit risks. The bank possesses many more points of contact with its customers and often more continuous contacts. The bank in many cases supplies investment capital in addition to working funds. Many firms are constant borrowers from banks, especially those which possess an inadequate supply of permanently required working capital. Thus the bank meets its customers for the purpose of furnishing, not only working funds but also investment funds. Furthermore, the bank holds its customer's checking and savings account, collects checks, drafts, and notes for him and from him, invests his surplus funds, disburses payments for him, etc., etc. In addition to this constant relationship, there is the rather common one of personal acquaintanceship with its

customers, owing, perhaps, to the fact that the client's business is in the same locality, or that the officials of the firm may have visited the bank to open a line of credit.

In contrast, the mercantile concern finds its relation to customers less close. Purchasing markets, invariably ruled by competitive factors and by changing influences generated by the seasonal and cyclical variations in business conditions, constantly find new customers coming and old customers going. Purchasers are free to seek the best market in a broad field. Besides this lack of continuity, the field of contact is narrower. The buyer, especially in the case of a special trade concern, appears only for the purchase of goods, or a variety of goods. If the sale is on time, one more contact at most is likely to be made at the time of payment of the bill. It follows that the method of measuring the debtor's credit worth, and the attitude toward assuming a given risk, is somewhat different.

Classes of credit operations.—In dealing with credit operations or transactions, we may distinguish several general classes. The credit man should recognize the general field of credit operations to which a given risk under analysis belongs. This gives him a proper perspective for the setting of his problem. His recognition of this field will depend upon three things:

1. The type of goods or funds involved.
2. The use made of the goods or funds by the debtor.
3. The second conditions the reproductivity or rate of turnover of the investment (meaning the period of time which must elapse before the reproductivity of the goods or funds will make possible to the debtor the repayment of his debt).

Upon this basis he may classify his operations as:

A. Commercial Credit.

   1. Banking Credit.
      a. Bank Credit.
      b. "Banking Credit."
   2. Mercantile Credit.
   3. Personal, Consumers', or Retail Credit.

B. Investment Credit.

1. Public.
2. Private.
   a. Corporate.
   b. Noncorporate.

Commercial credit operations.—Commercial credit operations generally meet the following tests: (*a*) the funds involved or transferred are the active, liquid, current funds used in business; (*b*) the goods involved, in mercantile credit, are those that are purchased for resale, whether directly or subsequent to fabrication. That is, the source of the funds used in commercial credit is to be found chiefly in the demand deposits accumulated by commercial banks, and the "goods" are those that are moving through the production process into the hands of the final consumer or into the possession of a producer who uses them for further production. The use made of such funds is, as a rule, for working capital purposes, that is, for the acquisition of raw materials, the meeting of payrolls, and the other expenses of a business incident to current operations. The use made of goods obtained on short-term credit is not, as a rule, for further production, except in the case of such supplies, tools, etc., as disappear with one, or a few, operations; rather they are obtained for purposes of resale. The time involved in the production operation and sale of the products, and in the collection of proceeds therefrom, is usually short—within a year. The turnover or reproductivity of such funds or goods is fairly regular and rapid, returning to the firm using them a sum equivalent to the original outlay.

Investment credit operations.—Investment credit operations, on the other hand, possess contrasting characteristics like the following: (*a*) The funds involved or transferred are, as a rule, the inactive funds of the community—chiefly savings. (*b*) Goods are seldom transferred on the basis of investment credit, for mercantile houses and commercial banks could not afford to tie up their working capital in such operations. The funds, then, used in investment credit, usually represent long-time funds obtained often by the borrower through intermediary financial institutions, such as investment bankers, savings banks, insurance companies, etc., or tempo-

rarily from commercial banks. These funds are used primarily for the purpose of obtaining fixed capital, such as land, buildings, machinery, and equipment, or they might be borrowed for the purpose of meeting permanent working capital requirements. The period at the conclusion of which the productive use of such funds will return an equivalent to the borrower is a long one, and is determined by the productivity of the investment, meaning that the fixed assets yield the equivalent of the original outlay only in small increments through the profits obtained with each turnover of the working capital in the current operations of a business, whereas the returns of working capital through current operations are equal, in comparatively short periods, to the original outlay.

Banking versus bank credit.—It is to be noted in *A* of the above classification, 1. Banking Credit has been subdivided into a. "Bank Credit," and b. "Banking Credit." It must be clear that, in taking deposits, in issuing demand notes or currency, in accepting drafts, and in borrowing on time, the bank is extending its credit to its customers; confidence in the bank reposes in the customers; the customers are creditors, and the bank is the debtor. The loaning and discounting function of the bank, on the other hand, gives rise to the reverse relationship. The bank becomes the creditor and its customers the debtors. Hence, our differentiation and the term given the latter function—"banking credit."

Overlapping of credit operations.—These classifications, though general, should serve the credit man in placing the risk properly in the credit system. Credits are closely interrelated and react on one another. Banking credit overlaps mercantile credit at either the buyers' or the sellers' end of a transaction. If the seller sells on time, he may have to borrow from the bank. If the buyer pays cash or takes advantage of cash discounts, he, too, may have to borrow from the bank. Likewise, the seller may sell the receivables, notes, or trade acceptances from his customers to the bank. Interrelations also exist between commercial and investment credit. Current borrowings of firms may be for fixed capital purposes. Long-term borrowing of capital might be engaged in for the purpose of meeting the working capital requirements. Many credit men have gone astray by not properly analyzing risks with a clear un-

derstanding of the different purposes for which credit is being sought.

Credit risks related to stage of production process.—The foregoing classification of credit operations is indispensable, but additional advantages are to be gained by bearing in mind, at the same time, what relation is borne by the risk under consideration, to the production process, in the light, that is, of the industry and even of the particular stage in the industry to which it belongs. For example, a bank might safely rate one risk lower than another, even though the factors in the risks seem of equal value, if it belongs to the earlier stages of an industry. To illustrate concretely, compare the fortunes of a concern engaged in the raw material stage of production, where business vicissitudes often exert an aggravated influence, with those of one in the same general line of industry, operating toward the consumer's end. The latter would find its sales, selling prices, and income much more even. The same would hold true of a manufacturing concern as compared with either the wholesale or the retail firm to which it sells. Data indicative of character, capacity, and capital might be equally favorable to assuming all three risks, but the retailers, being in a better position to judge the market, would not be burdened by the accumulation of stocks and the risks attendant thereon, as would wholesalers and manufacturers.[3]

This discussion should draw attention to the importance of determining the economic setting of the credit risk, developing thereby the ability to see the conventional "Three C's" illumined by the many sidelights of meaning cast upon them by a serious consideration of the how and why of credit operations.

Further modifications of the credit risks will be left for a later chapter, dealing with the influence of the business cycle.

Credit instruments and risks.—In studying the problems involved in the assumption of risk, we must not ignore the part played by the form of the credit contracts drawn. Collateral is often given as the fourth "C"; but even before collateral, which is rarely used in mercantile credits and only in the lesser portion of banking credits, recourse may be had to

[3] *Cf.* H. S. Dennison, "Management and the Business Cycle."

credit instruments, for the protection or strengthening of the risk. The discussion of this topic necessarily constitutes a slight encroachment upon the legal field, which, as we have said, is beyond the purview of this book. It is undertaken, however, merely for the purpose of showing the relationship between such legal safeguards and the confidence in the risk which obtained. The use of the warehouse receipt, trust receipt, bill of lading, and chattel mortgage, as well as stocks and bonds, as collateral for credit extended, aims at obtaining complete security, since these forms give the holder title, or conditional title, to the property to which the credit instrument, note, or acceptance is attached. The recognition of credit power in secured credit transactions may vary from a reasonable degree, in the case of ultra-conservative creditors, to its nonexistence, in the case of creditors who do not possess a speculative bent. It is not an uncommon practice to take account of the credit contracts or instruments available for protecting or strengthening a risk. But the important thing to decide is just what form of credit instrument will best serve the purposes of insuring ultimate payment. It is self-evident that every credit operation embodies conditions best met by a particular credit instrument. For example, in bank credit, a deposit is best expressed by an open book account instead of a promissory note given by the bank; the purpose of the currency bank note is best served by a demand promissory note, instead of a bank acceptance. In mercantile credit, the open book account best meets the conditions embodied in the terms of sale, namely, cash discounts and net terms. Therefore, when the investigation of a credit risk reveals a doubtful character, that is, if there seems to be an unfortunate propensity on the part of the debtor to circumvent the payment of his just debts, the assumption of the risk might be safeguarded by a proper credit instrument, that is, the debtor might be asked to sign a trade acceptance or to give a note waiving, in either case, if desired, the right to legal procedure if he defaults. Not only can the "Will he pay?" factor, but also the "When will he pay?" factor, be quite effectively influenced by a credit instrument. In like manner, the lack of promptness of a debtor who is carried on an open book account may be offset by requests for notes or trade acceptances. Much of this is disregarded as commonplace among business men,

but the use of these devices, where the quality of the risk is uncertain, might mean more business with safety, and, perhaps, the conversion of dishonest or lax debtors to higher standards of business conduct.

Elements of Credit Risks.

Ability to pay.—Confidence being the keynote of credit, evaluation of any risk, as already stated, must involve analysis of the three factors which go to make it up. But these, upon further study, resolve themselves into such subsidiary factors as the conditions of each risk determine. Let us consider the first factor—"ability to pay." Placing this ability in time is important. For example, the ability to pay, at the time of receipt of the order or application for a loan, may be good, but the real question is, What will be the debtor's ability to pay at the time of the maturity of the obligation? In other words, the credit man must forecast the debtor's future ability to pay. Second, What constitutes ability to pay? It is generally assumed that this depends upon the possession by the debtor of financial resources. But what financial resources? The answer may be the net worth, or the actual amount of money put into the debtor's business by the owners, and that left in the business by reinvesting earnings. Nevertheless, to assert that net worth constitutes financial resources, and, therefore, is a criterion of ability to pay would be to disregard the fact that financial resources, although reckoned in terms of money or prices, rarely exist in the form of money or cash. Rather, "financial" resources comprise a miscellaneous lot of goods and assets—land, machinery, plant, receivables, patents, etc. This heterogeneous lot of goods and claims against other individuals or firms exists, because of past expenditures of money both borrowed and owned, and the proportion of actual cash in a business is perhaps no more than from 5 per cent to 10 per cent of the book value of total assets. There is another difficulty in estimating this ability factor on the basis of "amount" of financial resources. It is well understood in business circles that ability to pay depends not alone on the "amount," but also on the quality, of financial resources. The quality of the resources may be expressed as

their convertibility into means of payment. This, in turn, is dependent on the extent to which the fixed assets are in operation, on the salability or marketability of the products, and on the collectibility of the proceeds. But another complication enters. It would be impossible to assume that certain resources or assets could be allocated to the group "owners' investments," since funds invested, owned, and borrowed lose their identity in the aggregate of the business assets of a going concern. The credit man can say, "$25,000 of the $30,000 invested in a concern equals the net worth, and this $25,000 may cover either fixed assets, or current assets"; but he cannot say that "this $25,000 represents merchandise, receivables, and cash, which are highly liquid funds, while the remaining $25,000 represents fixed assets. The nearest approach we find to a criterion by which to determine the quality of the financial resources of a firm lies in the measures of turnover of the several assets and the productiveness of the assets and capital invested. These measures will be discussed in more detail in later chapters.

The final aspect of ability to pay which deserves our attention is management and administration. Under this head a host of qualities may be considered. Such things as financial ability, technical ability, organization ability, ability to handle labor, merchandising ability, etc., are very important. But the difficulties in the way of measuring these qualities directly are often beyond the power and resources of a credit department to overcome. Except in the case of large banks or mercantile establishments, which maintain a so-called "industrial service" department, data on these factors must be gleaned indirectly from such information as has been gathered concerning the quality of the assets, based, as suggested above, on capital proportions, on turnover, and on productiveness.

Willingness to pay.—The second factor in the credit risk, "willingness to pay," is called, in common parlance, the moral element, or simply the moral risk. Here, again, orthodox and conventional notions lump all reasons for possible or actual nonpayment under the term "moral." This not only does an injustice to the debtor, but, in addition, is not in accord with the facts. A debtor may be seemingly unwilling to pay, but his apparent unwillingness may have a reason. Ability to pay

having been satisfactorily proved, his business dishonesty may be due to moral weakness—deficient character. Illuminating evidence as to the methods of dishonesty is recorded monthly in the *Bulletin* of the New York Association of Credit Men, and in the *Credit Monthly*. On the other hand, apparent unwillingness to pay may be due to actual inability to pay. Such a state of affairs is quite general among the debtor class in periods of liquidation and depression, being usually attributed at such times to "frozen credits" or immovable stocks. Unwillingness to pay may even arise out of the desire to wait for a better market. The debtor may have overstocked, or he may be unable to collect what others owe him. He may see a chance to buy cheaply for cash, and so may put off his creditors. He may urgently need fixed assets at once, and hope to provide them from resources at hand, taking a chance on the liberality of his creditors. Unless the creditor has had previous dealings with such a customer, proof of his standards of business conduct may have to be obtained from other creditors, or from sources other than himself. This is necessary in order to cover the risk adequately.

Manner or time of payment.—Now for the third factor in the risk—"manner of payment." Promptly paying customers mean smaller credit cost to the seller, and consequently a reduction of his bad-debt losses, collection expenses, credit department overhead, and, most important of all, a more rapid turnover of working capital. From this standpoint, methods of payment are important considerations in credit risks. The ideal buyer should always avail himself of the profits yielded by the prompt taking of cash discounts, if these are offered. A customer who lingers until net due dates clearly shows a lack of financial resources or of financial acumen. It is true that slow payment may be an established habit, often found even in the case of well-seasoned and substantial firms. Prompt payments with first orders, however, may be merely a policy of deception and may be followed by slow payments for subsequent larger purchases. Temporary delays in payments may be due to marketing conditions. Consumption demand may vary with incomes, and incomes may vary with industrial conditions, and industrial conditions are not within the control of the debtor. Overstocking and noncollectibility of receivables may result from similar conditions, or these conditions

may develop because of the debtor's poor judgment of his markets, or because of his too easy credit terms to his buyers. These and many other less important factors must be clearly apprehended in the analysis of a credit risk; and they must be sought, not only in the debtor himself, but from outside sources as well.

Sources of credit information.—Sources of credit information are varied. Miscellaneous information may be picked up here and there. An unsystematic and unscientific investigator follows a hit-or-miss plan. In other words, he gathers his information promiscuously and illogically. Such information will, of course, be related somehow to the various factors to be accounted for, ranging all the way from mere gossip and snapshot opinions to direct data obtained from the debtor himself. It may aim to throw light on ability to pay, willingness to pay, and manner of payment. In cases where a business concern cannot afford an organized credit department, or is too small to maintain one, some excuse for such methods may be found. Nevertheless, a firm may avail itself of the services of credit interchange bureaus, or may use the correspondence method of obtaining reliable information. No concern is too small or too poor to use intelligence and common sense in collecting reliable information on its credit risks.

Investigation procedure.—Systematic and scientific methods of credit investigation are primarily a state of mind, and the question of expense can be but secondary. As is pointed out, the prerequisites for measuring a credit risk are a clear recognition of the problem involved and the factors included in the problem. These having been determined, the obtaining of information bearing on these factors can be logically pursued and the results systematically recorded. It then becomes clear what additional information is necessary and the sources from which it can be obtained. The final analyses of the data can be postponed until all returns are in. All the systematized data should then be filed, together with the judgments to which they point.

Classification of sources.—The method of analysis once worked out and the nature of the credit information required clearly recognized, the question is, "From what sources shall the data be procured?" Remembering that we are dealing

specifically with banking and mercantile credit, we may group the sources as follows:

A. Sources of information outside the debtor.

1. Banks carrying his account.
2. Commercial paper brokers.
3. Present or former creditors of debtor.
4. Mercantile agencies, general or special.
5. Miscellaneous:

   Lawyers.
   Newspapers, trade, and financial journals.
   Gossip or opinions.
   Banks not carrying his account.

B. Sources of information from the debtor himself.

1. Financial statements.
2. Plant inspection.
3. Personal interview:

   Salesmen.
   Representatives of the firm.
   Officials themselves.

4. Creditors' records of debtors' previously submitted credit information.

Banks.— The following, if any, credit information is obtainable from the banks:

1. Age of account with the bank.
2. Form of borrowing.
3. Security given.
4. Line of credit.
5. Average amount borrowed.
6. How obligations sent to bank for collection are met.
   a. Banks' opinion as to "goodness" of risk—moral element.
   b. Manner of payment—prompt or otherwise.
   c. Estimate of financial standing—resources.
   d. Information from account (if carried).

In many cases, banks are not liberal sources of credit information, since their relations with their customers are of a more

confidential nature than those that exist between mercantile concerns and their customers. Banks wish to safeguard their risks by maintaining secrecy concerning unfavorable developments of those risks. Banks at present are generally assuming such an attitude toward giving credit information, and they really receive more information from mercantile houses than they are willing to give in return.

Mr. A. F. Maxwell, of the National Bank of Commerce, has the following interesting comments to make with reference to the coöperation between banks and mercantile houses in obtaining credit information:

In exchanging credit information the merchant has been very helpful to the bank, not only in the matter of ledger experiences, but by expressing opinions regarding the ability for management and the standing in the trade of their customers.

Many times, where a depositor maintains a small checking account, the bank has no opportunity to get financial information on which to base an opinion. It is almost the same as a cash customer would be in a retail store. A borrowing customer would file a statement, particularly with the larger banks, but in any case it would be of a confidential nature and the bank would be unwilling to violate this confidence.

However, it does have sufficient information on which to base an opinion, even if unwilling to disclose the facts on which the inquirer would base an opinion. There is another type of customer who might be using the open market, who does not place the bank under the same restrictions, and who gives figures to commercial agencies; and in cases of this type the bank would be more liberal with the information, because it would not be a violation of confidence.

Consideration should also be given to the kind of bank to which inquiries are made. For example, a small country bank may not have confidential statements, but would have sufficient general knowledge of the depositor, of his antecedents and history, and be a good judge of the local business property he controls, on which to base credit.

Replies to inquiries are in some cases vague and indefinite, and particularly if inquiries come direct from more or less unknown sources.

Then there is the average town bank, located in the average medium-sized city, which may have accumulated some credit information on the personal knowledge of the cashier or loaning officer, and not in credit files built up by the department accustomed to reciprocating information of this type.

Then there is a third class; that is, the medium metropolitan city bank having a credit department accustomed to obtaining financial data, and exchanging information freely.

As a rule, banks seeking information from merchants as to the standing of others do so to assist in determining the value of the credit risk, because of its direct relation or to answer an inquiry.

In the former case it holds in confidence any information received, and, in the latter case, uses the information with discretion.

Banks having credit departments and experience in gathering and tabulating credit information would welcome opportunities to coöperate.

Commercial paper houses.—Commercial paper brokers are often a good source for credit information available to banks. The information obtained from them may cover the following topics:

1. Length of time customer was dealt with.
2. Form of borrowing and security given.
3. Time and average amount of borrowing.
4. Manner of payment.
5. Opinion as to financial standing, ability, experience, and integrity of management.

Creditors' experience with risk.—The most important source of information for progressive banking and mercantile credit men, outside of the debtor himself, is "the trade"—meaning other creditors, past or present, of the risk. The information sought from this source covers the following points:

1. Business of the creditor.
2. Age of account or how long sold.
3. Highest amount of credit extended.
4. Amount owing.
5. Amount past due.
6. Unfilled orders or first orders received from debtor.
7. Terms of sale given.
8. Manner of payment.
   a. Discount taken.
   b. Payment at end of net terms.
   c. Number of days behind.
9. Comments by the creditor concerning other phases of his experience with the debtor. These usually cover:
   a. Status of account—enforced collection procedure, and kind necessary.

b. Lawsuits to recover.
c. Trade abuses—return of goods unjustly, cancellation of orders on slight provocation.
d. Satisfactory or not in other ways.

Mercantile agencies.—The mercantile agencies, general or special, present a quick and ready source of credit data. These are often the only sources of credit information available for some credit men. The capital and credit ratings, and other information contained in rating books, may offer an easy solution to the problem of procuring credit data, and the special reports procurable from these agencies are often quite complete. The chief objection to the services of these agencies is that the ratings are sometimes not up to date, however, while the special reports are often too expensive for the average firm to afford, beyond an exceptional case.

Miscellaneous sources.—Little need be said about the miscellaneous sources, such as lawyers, newspapers, etc. These are sources that may be held in reserve by the credit man, or utilized when other sources fail to cover the risk adequately. Expediency should govern the credit man in this regard.

Sources and factors in credit risks.—Let us now evaluate these sources of credit information, in relation to the factors in the credit risk. As we have reiterated, the chief factors around which any credit inquiry must revolve are, "Can he?" "Will he?" "When will he pay?" It must be clear that not all sources of information are of equal value in seeking the answers. Furthermore, it was pointed out in the foregoing pages that each of the above factors is made up of many subsidiary ones.

A scheme such as the following may be of service to the credit investigator:[4]

A. Ability to pay.
   1. Direct sources of information in order of value.
      a. Financial statements.
      b. Plant inspection.
      c. Personal interview.

[4] This classification may be regarded as tentative only, although, in general, it is believed to be sound.

2. Indirect sources of information.
   a. Records of previous dealings with debtor.
   b. Banks possessing the debtor's account.
   c. Commercial paper brokers handling debtor's paper.
   d. Special reports of agencies.
3. Secondary sources of information.
   a. Capital ratings of mercantile or special agencies.
   b. Creditor—seller's experience.
   c. Miscellaneous.

The above classification is based upon imputed authenticity and the sources are set down in the order of their value in throwing light upon ability to pay, evidenced (1) by the amount of financial resources; (2) by their quality, productiveness, marketability, or convertibility into means of payment; and (3) indirectly, by the ability of management reflected in (2). There can be no question that, under (1) above, this factor is most definitely discernible. Under (2) the information is obtained indirectly, but from those who have reason to know, since, in most cases, these sources possess a financial statement of the debtor or other figure-facts, or primary information on this point. The so-called *secondary* sources may or may not have had access to the debtor's financial statement or other figure-facts concerning his ability to pay. It is unquestionably safe to say that these sources can express, at the best, only opinion on this factor in the risk. Exception might be made of the mercantile agency, but, as previously stated, its information, as a rule is not current.

B. Willingness to pay.

(As we have pointed out, this factor in the risk is not exclusively a moral one, but is also based on economic exigencies. Furthermore, there is no direct information available except in a personal interview, since a debtor would be very unlikely to give information concerning his intentions or moral character.)

1. Direct sources of information.
   a. Personal interview only.

2. Indirect sources of information.
   a. Previous dealings with debtor.
   b. Creditor—seller's experience.
   c. Banks' experience.
   d. Commercial paper brokers' experience.
3. Secondary sources of information (usually estimates or opinions).
   a. Credit rating of mercantile agencies.
   b. Special reports of agencies.
   c. Miscellaneous sources.

It may be gathered from the above that the sources shape up somewhat differently as to value in determining the second factor in the risk. The willingness to pay cannot be determined from financial statements and plant inspection; therefore, these sources have been excluded. They may indicate, nevertheless, whether the moral risk has any economic grounds. If perusal of these ability sources reveals no economic reason for unwillingness, then a personal interview based on the ability information at hand ought to furnish direct evidence of the debtor's intention or moral character. Again, if the financial statements indicate a healthy state of resources over a period, and yet the experiences of the creditor, and of other creditors as well, indicate trouble in collections, the moral element may be quite accurately gauged. To such information might be added whatever the secondary sources may offer.

C. Manner of payment.
   1. Direct sources of information.
      a. Previous dealings with debtor.
      b. Creditor—seller's experience.
      c. Banks' experience.
      d. Commercial paper brokers' experience.
   2. Indirect sources of information.
      a. Financial statements.
         Large payables.
         Large accounts payable in proportion to notes to banks or commercial paper brokers.

3. Secondary sources of information (usually estimates or opinions).
   a. Special reports of agencies.
   b. Mercantile agencies.
   c. Miscellaneous.

It can be seen in this last group that the sources of information reveal themselves in a different way according to their particular relevance to the manner of payment.

We believe that the above scheme might with profit serve as a pattern for any particular credit department as part of its plan or method of credit investigation.

Customers' relations to bank and mercantile house.—The importance of procuring information directly from the debtor cannot be doubted. This method, insuring correct and first-hand information, cuts down the expenses of credit work and establishes closer relations with the customer. On the other hand, not all valuable credit information can be so obtained; recourse to other sources is not only necessary but desirable. Necessary, since information which throws light on willingness to pay and manner of payment cannot be satisfactorily obtained from the debtor directly; desirable, since, as we might know, the debtor always seeks to inspire credit confidence. So that, however close the relationship of creditor and debtor, evidence directly procured must always be checked and corroborated. Inasmuch as credit information relating to the various factors in a risk cannot be obtained from one source alone, as sources differ in authenticity, and as the most authentic sources for all data are not always available, allowance must, of necessity, be made for time, expense, ability of the credit man, nature of the organization of the credit department, size of the concern, size of the debtor concerned, location of the debtor, nature of the business of the creditor and the debtor, and many other factors.

A direct credit investigation instituted by a bank differs somewhat from one undertaken by a mercantile house with regard to the relationship of each to its customers. The customers of a bank appear often for personal interviews, or the bank officials or credit men visit the customers' places of business. If the bank maintains a staff of credit investigators, or an industrial research staff, especially if bank and customers

are located in the same city or community, as often happens, and even in the case of large corporations, with scattered branches and places of business where personal visitation must cover a wider field, these visits may be frequent. The mercantile house, on the other hand, rarely sees its customers. The market for its products cover, as a rule, distant areas. It is true that salesmen may visit customers periodically, though this contact is often more detrimental than helpful. Occasional visits of regular customers may occur, but these are usually merely "friendly" or social. When a bank opens a line of credit with a customer, it is in a position to stimulate a wide range of discussion concerning the debtor's business policies, resources, etc. In contrast, the mercantile customer buys without any discussion, except with the salesman, or as he may seek to bargain concerning the quality or price of the goods. This does not facilitate the work of the mercantile credit department. Banks often require a signed financial statement and considerable supplementary information besides, whereas, mercantile concerns rarely make this a practice, even though it would be a very commendable one. The bank's primary business is to grant credit, and, therefore, it must engage in a constant surveyance of outstanding loans. Credit files assume more importance; collecting continuous credit information concerning the progress of the borrower's credit worth and miscellaneous checking are generally practiced. The mercantile concern, on the other hand, finds its contacts with customers more difficult and farther removed. Although a progressive mercantile credit department might follow the example of the bank, in the requirement of collateral in certain cases, it rarely ever resorts to security for its sales. Finally, the bank is in a better position to advise its customers. It loans to many trades; it can compare the progress of concerns in similar lines of business; and it can better gauge the trend of business conditions within specific industries as well as generally. As a result of this the bank can give valuable aid to its customers and thereby facilitate closer relations.

It follows, therefore, that banks can rely to a greater extent on direct credit information concerning their customers than can a mercantile house. Financial statements, the most important source of direct credit data, are more at their com-

mand. Besides, they possess better facilities and opportunities for personal contact with debtors. To the mercantile house the interchange of credit experience, which also may be a fertile source for banks as described previously, must largely take the place of personal contact. This does not mean, however, that the use of direct sources on the part of mercantile houses is not practiced, for it is, to a large extent; and, with the growing knowledge of how to analyze the direct figure-facts as contained in the debtor's statements, a greater development of direct sources for the analysis of mercantile credit risks may be looked for.

CHAPTER II

INTERCHANGE OF CREDITORS' EXPERIENCE

Selection of sources for credit information.—With the unmeasured risk before him the credit investigator should ask himself these questions: What factors does this risk problem contain? What *possible* and *available* sources of credit information are there for each factor? How can the information be procured? If he has determined, through experience or otherwise, the authenticity of the various sources of information which have a bearing upon the several factors, his next consideration should be to select these sources. In order to avoid retracing his ground and to save expense and time, he might find it profitable to subject the various sources to such tests as these:

1. To what extent does the source cover the various elements in the risk?
2. How current is the information, and does it furnish any clues to antecedents and to possible future developments?
3. How expeditiously can the information be obtained?
4. Is it the best available source from the standpoint of authenticity?
5. If the information is obtainable from several sources, are the efforts, time, and expense required to follow them up commensurate with the means at hand, or do the latter limit the number of sources that can be appealed to?

Other Elements to be Considered.

Costs involved.—Obtaining credit information directly from the risk itself has been discussed in the foregoing chapter, and the financial statement as a direct source of information will occupy the major portion of the remainder of this book. The extent to which the various other sources may be used depends, first, on the expense involved. What can a

firm afford to spend on a credit department? Clearly, there would be available to every firm that amount over and above "normal" losses which it stands to lose by its bad-debt losses, expenses of collections, interest lost on tied-up working capital, profits unearned as a result of slower turnover of working capital and curtailment of operation, interest on borrowings to offset tied-up working capital, and losses of sale through the unsettled credit policy that is so often annoying to the customer. The sum of these items being in excess of the normal credit costs accruing to such a firm had it possessed a good credit department, the difference between the normal and the gross loss would represent its probable loss through inefficiency in its credit department, and the sum it could afford to prevent these losses. What this amount could be per annum any firm can determine for itself upon investigation. After allocating this sum to the various expenses incident to the work of a credit department, the amount available for tapping sources of credit information can be budgeted.

Size, age, and location of firm.—Second, the extent to which sources are used will depend upon the size of the firm. Large firms naturally have more resources at their command and better organizations at their disposal than the smaller firms. The third factor is the age of the firm. Older and well-seasoned firms have built up by business contacts, reputations which mean readier access to sources of credit information. Again, firms of long standing possess accumulated experience and credit data, provided credit files have been kept. Their customers, also, are likely to be more regular, which perhaps has the effect of limiting credit inquiries to unseasoned or new accounts. Fourth, the location of the firm and the business of its risks influences the extent to which credit inquiries are instituted. Firms dealing in single type, or limited lines, of goods, and possessing customers whose business is likewise restricted, can more easily cover the sources. Limited markets also make it easier to trace credit information. The same is true regarding location. A firm located in close proximity to its markets, or in a district where credit interchange systems are highly organized, has a decided advantage.

Valuating sources in relation to factors in risk.—With the above in mind, the credit man has approached the problem of sources of credit information in the proper attitude.

Recalling here what was said in the first chapter regarding the value of sources in relation to the various factors in the risk, it is needless to repeat that data relevant to ability to pay can best be gathered from the risk itself if that is at all possible. It can also be obtained, as we have seen, from other sources which possess the direct information in a more or less authentic degree. The remaining sources are secondary, inasmuch as they seldom possess up to date, or primary, information, but merely estimates or opinions. Concerning the other two factors—"Willingness to pay" and "manner of payment"—different sources are focused. The circumstances which give rise to information relative to these factors are the experiences of others. There are also the "observations" of lawyers, bankers, and others regarding the general credit worth of a risk. Finally, the credit man can obtain the credit standing of a customer "cut and dried" in the form of ratings of mercantile agencies, or he may turn over the inquiry to a paid agency for a special report. This is usually the only source available to a great number of mercantile and credit men.

Methods of obtaining credit experience.—Direct information, either complete or incomplete, or, if no direct information has been obtained from the credit risk itself, additional supporting or corroborating evidence may be found at its best in the experience of other creditors with the risk. This does not mean that agencies, bankers not having the account, lawyers, and other miscellaneous sources are not necessary or even valuable. These sources may often be found where the business of the customer is located, and the information obtainable from them may include the following:

1. Legal information.
   a. Property transfers, deeds, and mortgages executed and recorded.
   b. Collection litigation—and other lawsuits.
   c. Bankruptcies and other financial involvements.

2. Trade conditions.
   a. In territory—sales, collection conditions, industrial conditions.

b. In industry—production, stocks, prices, movement of goods.

3. Information on business.
   a. History and antecedents.
   b. Management and official personnel.
   c. Banking connections.
   d. Financial resources and size of business.
   e. Opinions on risk.
   f. Fire record.

Such information as the above may be obtained by asking the respective "sources" for a special report on a risk with a previous understanding as to stipend, etc.; or such information as desired may be requested in a form letter to be filled in by the "source" with a column or space reserved for special comments and remarks.

Three important sources of credit experience.—Returning to the methods of obtaining direct credit information from the chief sources of that information—the experiences of other creditors of the risk—there are at least three important and valuable sources, namely, bankers carrying the account, commercial paper brokers, and sellers of goods or mercantile houses. Methods of forming contacts with these at the disposal of a credit department are three:

A. By direct interview.
   1. By personal visit.
      a. Credit department investigator.
      b. Other member or representative of firm.
   2. Meetings of credit men's clubs or associations.
   3. Correspondence.

B. By joining credit interchange bureaus.
   1. Credit interchange bureaus.
   2. Credit clearing houses.
   3. Trade credit bureaus.

It must be observed, however, that credit interchange bureaus draw their memberships primarily from the mercantile rather than from the banking field or commercial paper brokers.

A. *Direct Interview.*—If the method of direct interview is resorted to, the information sought is usually grouped as follows:

1. Type of business represented by concern giving the information.
2. How long sold.
3. Highest credit extended.
4. Terms of sale.
5. Manner of payment.
6. Discounts taken.
7. Payment at end of net terms.
8. Days slow.
9. Amount owing.
10. Amount past due.
11. Unfilled orders or first orders.
12. Last sale.

Experience covered by these points is discussed in a way at the informal gatherings of credit men in cities where such meetings are the practice. By such means credit men obtain valuable information on accounts that are new, on those that show recent unfavorable developments, on those that play one creditor off against another, or on those that seem to be overbuying. If the information is to be obtained by correspondence, a form letter containing the headings under which data are requested, as above outlined, would be advisable.

Difficulties in obtaining creditors' names.—If credit experience is gathered through the various direct methods, it is necessary that the credit department obtain the names of the creditors of the risk. Here the credit man meets one of his chief obstacles. Is he to rely on the references requested from, or offered by, the customer? To circumvent the possibility that the customer is offering only the names of creditors with whom he is in good standing, appeal to a neutral or disinterested third party may be made. The customer's bank is a helpful source in this respect, since it is usually in a position to discover the names of all its customer's creditors through remittances or returned checks. The salesmen may come in handy here, if they feel so inclined, to make notes of names of sellers to the customer from tags or boxes and stock

at the time of their visits. If the customer's market is a local one, a brief canvass might reveal those from whom he buys. Again, if the buying of the customer or the location of his creditors is scattered, owing to legitimate dealing in various markets to obtain the best prices and terms, or to the nature of his business which may require scattered purchases, or to willful shifting to avoid being checked up, then the credit investigator will be greatly handicapped in his efforts to make contact with a sufficient number of creditors to furnish adequate experience data. This results often, of course, in an incomplete survey, or leads the credit man to rely upon mercantile agencies and other miscellaneous sources for additional information on the risk. Under such circumstances these latter sources may be of great aid to the credit man. One of the best means of obtaining the names of the credtiors is by joining the trade association; this is the general practice. Trade associations can thus be of great service to their members.

Duplication in direct methods.—There are, however, other objections to the direct obtainment of creditor experience. It leads to an unwarranted duplication of investigations of the same risk, consuming the time of the credit department of firms from whom repeated information is sought. For example, let us assume that a concern wishes to shift to other purchasing markets, because of more favorable treatment, or because it wishes to take on a wider or a new line of goods, an increasing number of inquiries would naturally arise concerning this firm's credit standing, and there would be much duplication of effort and time. In addition, such sudden increase in the number of inquiries might easily injure the credit reputation of the risk, even though its actual credit worth be unimpaired. Finally, direct interchange of credit experience is often subject to abuse by unscrupulous individuals or firms who seek such credit information for the purpose of weeding out the poor credit risks in their trade solicitations.

Limited scope of trade bureaus.—The method of soliciting direct credit information from creditors of the risk has value, nevertheless, for mercantile houses which cannot, for legitimate reasons, seek the aid of credit interchange bureaus. They are sometimes in a position to solicit names from trade interchange services, but this service may be found to repre-

sent only a limited field of the risk's market, since the trade association restricts membership primarily to business in a particular trade. If the risk deals with sellers in different trades, the scope of names would necessarily be small.

B. *The credit bureau interchange service.*—Outside the trade interchange bureaus above referred to, there exist three principal classes of bureaus:

1. *Credit interchange bureaus* organized under the direction of the National Association of Credit Men. This chain of credit bureaus practices interdistrict clearing of credit information and also maintains a central Credit Interchange Bureau at St. Louis which clears for the various district bureaus on a national scale. A list of the coöperating and unattached associations and bureaus located in various parts of the United States is given in the *Credit Monthly* published by the National Association of Credit Men.

These bureaus are incorporated and officered by the local association of credit men in the district.. The membership consists of banks and mercantile concerns. A subscription price is charged by the bureau for membership. Each member receives for this identification a number or symbol. He is required to register with the bureau the names of his customers. Any inquiry coming from any member about the credit standing of a customer is "cleared" by the bureau. No member knows what other member made the inquiry, nor what members gave the information. The charges for the services of the bureaus are usually as follows:

1. A certain number of inquiries are allowed with the membership subscription.
2. Any more inquiries may be subject to a charge at a flat rate for 100 or so, or to a rate per inquiry, or on a graduated scale.
3. In case of reciprocal reports to members, charges may vary from nothing at all to one-half the usual rate for each report.

A reciprocal report is made to a member who has given information in answer to a credit inquiry and who requests a copy of the final report on the risk.

These bureaus do not comment on the report made to inquiring members, but leave the judgment of the risk to be formed by the member. They do, however, often render valuable aid in collections and in the prosecution of defrauding debtors.

2. The *credit clearing house* is a national organization operating along very much the same lines as the credit interchange bureaus above described. It performs, however, an additional service which distinguishes its functions from those of the former, for it will render credit decisions upon risks inquired about. In making these decisions for members, it does not divulge the sources or type of information upon which it rests its decisions, but guarantees the judgment by reimbursing the member for any losses he may incur in accepting the opinion of the credit clearing house. Of course, if the credit clearing house stands ready to indemnify the seller in case of loss, the risks so guaranteed may tend to cover only the very safe ones. Therefore, an undue reliance by a seller on this form of credit service may result in a serious curtailment of the volume of credit sales. The service of credit clearing houses approaches the services of mercantile agencies in their issuance of rating books, except that the judgments of the latter are not guaranteed. The credit clearing house is a nationally organized bureau and in a position to clear credit information on a national scale, both geographically and as to types of business.

3. *Local "independent" credit or trade bureaus* may exist under various auspices. Local chambers of commerce, bank clearing houses (for example, in Chicago), retail trade associations, special trade associations, and local credit men in many places conduct such bureaus. They may operate by performing very much the same service as the credit interchange bureaus of the National Association of Credit Men, or by merely acting as intermediaries or clearing houses for names of customers of the members. Under the latter form of organization they merely bring the members in touch with each other for purposes of swapping their credit experience with customers.

The advantages of interchange of credit experience.—Credit interchange service is perhaps the best means of obtaining information concerning the two factors—"willingness to

pay" and "manner of payment." For who would be in a better position to furnish information on these aspects of a risk than those who have had experience on these points? Of course, the other element—ability to pay—can be but hazily determined from these sources. Sec.-Treas. D. W. Cauley, of the Cleveland Credit Interchange Bureau, lists the following as some of the benefits conferred by the Interchange Bureau:

1. Invaluable in revising accounts.
2. Helps to eliminate the undesirable buyer.
3. Valuable when a customer asks for an extension.
4. Gives the information and advice of those who know.
5. Discloses the accounts that are discounted or paid when due.
6. Minimizes the bad-debt waste so burdensome to honest business.
7. Aids in keeping tab on special accounts—a great percentage of them go wrong.
8. Keeps the credit files alive and right up to the minute with the latest information.
9. Tells when the customer is overbuying or is buying in other than his legitimate territory.
10. Tells whether the customer is paying the new creditor promptly and allowing others to wait.
11. Sometimes discloses that one may be mistaken in the belief that he is the principal creditor.
12. Invaluable to houses selling small accounts where the agency rating is blank, or less than $500.
13. The cost of several years' experience in the bureau may be saved by one reciprocal report for which there is no charge.
14. The bureau reports are "ante-mortem" not "post-mortem" statements and are valuable to the members for use "before" instead of "after" the fact.
15. The reciprocal reports are of special value when a former customer requests a reopening of his account. The files in which they rest tell a real truthful and vital story.
16. The information assembled and disclosed is reliable and dependable, as it is taken from active, live ledger accounts. It is up to date—no guesswork, no prejudice, no prophecies.

The list is perhaps not too ambitious. If this form of service, limited though it may be as to the number of creditors discovered (it should be remembered that the interchange bureau yields many more contacts with the creditors than direct

methods of interchange), be supplemented by direct interviews, visits, and financial statements, or, if these are not procurable, by appeal to other sources, such as banks, lawyers, mercantile agencies, etc., the inquiry should be fairly well covered. The desirability of supplementing the credit interchange data is to obtain additional clues to the factor of ability to pay.

Practiced illustrations of credit interchange reports analyzed.—

Case 1. The case on pages 38 and 39, an actual report on a risk rendered by the ——— Association of Credit Men through their credit interchange bureau to a member which is the ——— Plumbing Supply Company in Michigan. It will be noted that the report covers four districts, namely, Ohio, Cleveland, Detroit, and Chicago, which means that a representative number, if not all, of the risk's creditors were asked to answer the inquiry. The method of procedure was this: the Cleveland bureau submitted the inquiry to the Chicago, Ohio, and Detroit bureaus and they in turn obtained the information from their members who had dealings with the risk. If the inquiring member, or the Cleveland bureau, had suspected that the Plumbing Supply Company had extensive or scattered dealings elsewhere, the inquiry might have been sent to the St. Louis Central Credit Interchange Bureau for national clearing.

First it is to be noted that the report is dated Sept. 15, 1922. At this time business conditions were pulling out of the slough of depression that had reigned during 1921 and during the early part of 1922. This firm, however, deals in plumbing supplies, and it will be remembered that the building trades remained somewhat more active during those years than did general business. With such information available as is published by the various services reporting on business conditions both generally and in particular areas, and with that published in the *Bulletin* of the Federal Reserve Board, the Federal Reserve banks, the *Commercial and Financial Chronicle*, and various other readily accessible mediums at hand, the credit analyst of such a report as this can gain a pretty accurate idea of the marketing conditions surrounding the risk. This will enable him to explain some of the "whys" and "wherefores" of the replies given in the report.

The second step in the analysis of the report consists of examining the data submitted under each head.[1]

1. *Business or submember.*—This column states the type of goods sold by the member who renders the report on the risk to the bureau. A glance at this column should indicate to the credit man what classes of goods have been purchased by the customer. It can be seen from the report that gas appliances, metals, oil, paints and varnishes, etc., besides plumbing supplies, have been purchased. Analysis of this column has further value, in that it might suggest to the mercantile credit man from what sellers the risk purchases such goods, as the credit man's own firm has sold, is selling, or is about to sell to the customer. This column alone, then, offers this information:

a. Evidence of the line of goods the customer purchases.

b. The approximate number of firms from whom the customer purchases the same kinds of goods as sold by the inquiring member firm.

c. The approximate proportion of the kind of goods sold by the inquiring firm that is bought to the total amount of goods bought as shown in the report.

d. The kind of goods the customer buys on time as compared with those he buys for cash.

The results of such a careful analysis would shape up as follows:

a. As far as can be determined this firm handles approximately ten or more different lines.

b. Assuming that the inquiring firm handles plumbing supplies only, it is found that the customer buys from at least twelve other houses.

c. From six of the twelve houses the customer buys for cash.

d. The data does not indicate any settled policy in buying certain goods on time and others for cash.

We may draw the provisional conclusion that the customer deals only in a limited line of goods pertaining to the plumbing

[1] The meaning of the data given under each head is, of course, only tentative, for the cumulative results gleaned from all the items is the deciding thing. This will be demonstrated later.

ANALYSIS OF CASE I

PLUMBING SUPPLY COMPANY, 9 15–22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				CLEVELAND DISTRICT 2816-8						
Gas Ap.	New	—	—	—	7	—	—	—	—	(AA)
				OHIO DISTRICT						
Mfg.	'19'21	—	—	—	—	—	—	—	—	(BB)
				DETROIT DISTRICT 728						
Mtls.	—	—	—	—	—	—	—	—	—	Est. Req.
Pl. S.	—	—	—	—	—	—	—	—	—	Cash only
Pl. S.	—	—	—	—	—	C	—	—	—	(A)
Oil	'10'21	$ 54	$ 54	$ 54	—	2-10N30	—	—	270	(B)
Pl. S.	—	—	—	—	—	C	—	—	—	(C)
Mtls.	—	—	—	—	—	C	—	—	—	(D)
Pl. S.	1 yr.	135	—	—	—	Reg.	x	—	—	L.S. 10/1/21
Pl. S.	—	—	—	—	—	—	—	—	—	(E)
Pt. & Vn.....	3 yrs.	191	18	18	—	60 D	—	—	180	(F)
Ir. St.	—	—	—	—	—	C.O.D.	—	—	—	(G) L.S. 7/24/22
Pl. S.	—	—	—	—	—	C	—	—	—	(H)
Pl. S.	yrs.	3700	2260	2260	—	60	—	—	480	a/c in hands of atty.
Oil	yrs.	10	10	—	—	—	—	—	90	L.S. 7/12/22

Pl. S.	—	—	—	—	—	—	—	—	—	(I)
Pl. S.	—	—	—	—	—	C	—	—	—	Cash
Spec.	yrs.	250	125	125	—	30 D	—	—	365	(J)
Pt. & Vn.....	—	115	115	115	—	—	—	—	—	(K) L.S. 5/10/21
Pl. S.	—	—	—	—	—	C	—	—	—	(L)
Pl. S.	2 yrs.	1000	—	—	—	C	—	—	—	(M)
Pl. S.	—	—	—	—	—	C	—	—	—	Cash only
				CHICAGO DISTRICT						
———	—	—	—	—	—	—	—	—	—	(N)
Steel	—	60	—	—	—	S.D.	—	—	—	L.S. 4/3/19 1 shipment

(AA) This company wants to handle our goods.
(BB) Sold as high as seven hundred dollars—slow and unsatisfactory—checks and note dishonored. Refused to sell. Understand they are now bankrupt.
(A) Several judgments recently rendered against this firm, owing us $50, all past due. We do not advise credit being given them unless secured.
(B) Claim in attorney's hands.
(C) Sell for cash only.
(D) Very slow—last account on advance cash terms.
(E) We are suing this party.
(F) Makes unjust claims—unsatisfactory account.
(G) Cash or certified check—L.S. 7/24/22.
(H) Not very good—all orders with cash or C.O.D.
(I) Too slow—do not sell—pays by notes.
(J) Cash with us from now on.
(K) L.S. 5/10/21—account owing since 11/20.
(L) C.O.D. only—too slow.
(M) Cash now—checks protested—account closed 5/21.
(N) $2,700. Account in hands of Det. Adjustment Bureau.

business; that he buys plumbing supplies from at least twelve houses; that he follows no settled policy in purchasing certain goods for cash or on time; and that this is due perhaps to the necessity of paying cash if he wants orders filled.

2. *How long sold.*—The rather incomplete data in this column leaves much to be desired. Only nine out of twenty-three returns state the years sold. The years sold, opposite each individual report, indicate the age of the account and register the length of the experience of each creditor. This should give the credit man an idea of the graded weights or value to be given the individual replies. Besides, the column tells further tales. It gives indirect evidence of the tendency of the customer to shift his purchases. An unduly large number of new creditors, dealing in the same line of goods as the inquiring firm, may reveal the fact that the customer is searching for new purchasing markets. This may or may not be to his interest. If better prices and service have been obtained, the matter would not be serious. On the other hand, should he show a tendency to seek to buy outside his legitimate area, it might indicate that he has lost standing with the old creditors. Whether this is the case, the data in other columns may help to discover. The information this heading gives is:

a. Age of the experience recorded.

b. Basis for grading this experience in point of value.

c. Tendency of the risk to shift his purchasing market—which may augur ill or well.

This information points to the following:

a. The nine creditors reporting may be classified as follows:

3. Sold for years.
4. Sold from 2 to 3 years.
2. Recent.

b. From the remarks it would seem that those creditors having difficulties in collection, but not reporting in this column, had only one or few orders from the risk.

These data offer nothing very conclusive, except that few creditors have had lengthy experiences with the risk and those before the business depression set in. The remarks give only

the vague clue that the customer has shifted his purchases, because of poor standing with former creditors who would no longer sell, except for cash.

The form used by the Credit Association should have included next a column headed "Last Sale." The Philadelphia Association of Credit Men's interchange bureau form contains such a column. Data thereunder would throw light on the tendency of the risk to drop former creditors and to seek new ones. It might be noted that the column headed "Comments" contains last sales under the symbol "L.S." But these are scattered and would have been much more complete if a column had been provided on the form.

3. *Highest credit.*—Again, the report is inadequate under this head. The absence of replies might further prove the assumption made above, that many of the other sellers were new or sold upon some kind of cash arrangement. The highest amount of credit extended is significant in determining the limit of the credit orders. These data further indicate indirectly the size of the customer's orders for particular goods and his practice with reference to the terms upon which these goods are purchased. The analysis of the figures in this column should yield this information:

a. Number of sellers that granted credit to customer.

b. The limit advisable to be set to credit orders from customer.

c. The amount of credit buying of certain classes of goods by the customer.

This information gives the following leads:

a. Credit was reported by few sellers.

b. The credit limit is difficult to determine, for the range of high credits is too great considering the few replies submitted.

c. Heaviest credit buying in plumbing supplies.

The conclusions can be briefly stated, namely, that, under the head of highest credit, the data points to difficulties on the part of the customer to buy on credit, and the limit of credit lies somewhere between $1,000 and $3,000, while the customer purchases chiefly plumbing supplies on time. The latter

practice is easily explained in view of the fact that most plumbing supplies are disposed of on a contract basis, involving considerable time before the construction is completed and contracts are settled.

4. *Amount owing.*—The amount owing gives direct evidence of the creditor's obligations to reporting creditors. These items would be representative of the payables outstanding. Toward the closing phases of a prosperity cycle these items might increase, since it is a general practice in those periods to accumulate inventories. This buying for stocking up often exceeds the available funds on hand or derived from current sales; therefore there is a greater use of credit, both banking and mercantile. It is at such times that banks begin to mark up interest rates and scrutinize credits more closely. On the other hand, sellers of goods feel competition increasing. The sellers' market is gradually converted into a buyers' market, which stimulates sellers to grant more liberal terms to customers. But sellers at such times also begin to press collections. The customers operating closer to the point of consumers' demand (which subsides more belatedly than the appearance of sluggishness in the producers' markets, even though its rate of increase may be somewhat slackened) continue to take advantage of the better terms of sale offered.

The amount owing also indicates the extent to which the various goods have been purchased on time. This has a significance for the inquiring member who finds that his line of goods has been the object of a considerable number of the time purchases made by the customer.

The information revealed by the data in this column is:

a. Index of the amount of mercantile payables incurred by the risk.

b. Distribution of time purchases among the various creditors selling a certain kind of goods.

c. Amount owing in the light of the stage of the business cycle.

This rather meager information offers the following:

a. The amount owing seems high in comparison with the highest credit figures, and, furthermore, the remarks give ample ground for the belief that still more is owing by the

customer. For example, remarks (A), (E), and (N) definitely indicate this.

b. The largest payables appear to be for plumbing supplies.

c. The building activity in Detroit was good in the latter part of 1922. Continuous purchases could have been expected at that time.

5. *Amount past due.*—In this report, the credit man should take close cognizance of the remarks of each creditor. The amounts listed in the column are very evidently not all of the overdues of this risk. See remarks (A), (E), and (N). The amounts past due must be regarded in the light of business conditions. Recall again that building and construction activity went through a distinct depression in 1921 and the early part of 1922, which also was the case in the Detroit district. This depression being succeeded by a sharp recovery during the second quarter of 1922, which continued until it reached the very high peak in the spring of 1923, we might conjecture that the amounts past due were the lingering debts incurred before and during the depression, and that losses might have been suffered or the plumbing business have been so depressed that merchandise could not be sold. On the other hand, a customer might be actually trying to "frame" a bankruptcy or to dodge payment. The reasons for the amounts overdue might, therefore, be several, but the report gives no direct evidence as to what they are. Subsequent improvement in the plumbing business, owing possibly to increasing building activity, might lead to the customer's ability to liquidate, provided the moral risk is sound.

From the column of amounts owing the credit man may take the following suggestions:

a. That all overdue items, including those intimated in the remarks, are high, and that one house especially, selling plumbing supplies, which handled the account for years, is heavily involved, and that it might be possible for the risk to pay up in view of the favorable tendencies in the building industry.

6. *Unfilled or first orders.*—The column is vacant; for some reason the reporting members did not give information

under this head. The purposes of the data provided for may be several. If the replies indicated many unfilled orders, the inference might be drawn that the customer's orders are not filled because of poor credit standing; in other words, the sellers are withholding the shipment of goods while investigating the risk, or because they are seeking some form of cash remittance, either before, or upon arrival of, shipment, or because the risk was found from experience or investigation to be unsatisfactory. The number of first orders is indeed significant. If these appear large in amounts or number, the customer might be purchasing from new houses, because he has lost credit with the old. This would likely be the case, especially if the new orders did not indicate that the customer was taking on a new line of goods, or if they should indicate that buying was being carried into distant markets or beyond the legitimate area within which a firm may be economically restricted. The latter could be determined only if the interchange report presented the experiences of creditors in other districts. If reports from other districts are included, the new orders might be scanned with a view to determining how many are found in these districts. However, it might be quite possible to find similar proofs regarding new orders within the district where the risk is doing business.

If the replies in an interchange report contain information with reference to unfilled or first orders, the following points of the analysis may be covered:

A. Large unfilled orders may indicate:
   a. Poor credit standing.
   b. Sellers withholding shipment because they are:
      Investigating risk.
      Seeking some form of cash payment.
      Do not care to sell.

B. Large number and amounts of new orders:
   a. Lost credit standing with former sellers.
   b. Seeking to overbuy.

C. Volume of new and unfilled orders for goods, especially for those sold by the firm making the credit inquiry.

7. *Terms of sale.*—The terms of sale express the conditions of payment upon which goods are sold. Terms of sale, as a rule, contain two elements, the cash discount and the net terms. The cash discount element in turn consists of two factors, namely, the size of the cash discount and the discount period. For example, if terms of sale were 2 per cent—10 days—net 30 days, the size of the cash discount would be 2 per cent of the face of the bill, the discount period equals 10 days, and the net term, when the bill is due if discount is not taken, is 30 days.[2] Terms of sale may nevertheless be so called, even if terms are cash or if no discount is offered. In the case under discussion we find two replies which granted cash discounts and net terms, that is, 2—10—N 30, and Reg. (regular); three with only net terms (60D, and 60 and 30D); two with cash terms only (C.O.D.) and (S.D.), or on sight draft. It must, however, be noted that in the remarks a large number of cash terms are intimated. The column entitled "Terms of Sale" possesses a twofold meaning for the credit man. First, the terms given by the replies might be considered as the usual terms granted in the industry as a matter of course, or granted habitually to this one customer. Second, the terms given might have been modified by the sellers or their particular customer, either because they considered the risk extremely good, on the one hand, or extremely poor, on the other. If they considered it good the terms might be more liberal; if poor, these would tend toward cash or shorter net terms.

The terms should again be evaluated by the credit man on the basis of reasonableness. He is usually acquainted with the terms in the industry to which his house belongs. From these he can judge, to some degree, whether the terms offered the customer by other sellers have been unduly severe.

Applying these principles to the analysis of the terms of sale given in the above report, we must first recall that, from the intimations in the remarks, most of the unanswered replies in the column use cash terms. This would indicate that out of sixteen replies nine sell on cash terms only, while the remaining seven had trusted, or continued to trust, the risk. If the last sales were given, it could have been more easily deter-

[2] *Cf.* W. H. Steiner, "Mechanism of Commercial Credit," Chapter i.

mined what the current attitude of all the creditors is in regard to terms. If the credit man is at all familiar, as above pointed out, with the usual terms of sale granted in the industry represented by his house, he could readily determine whether the terms were the result of lost credit standing. It is quite clear, from the indirect evidence at hand, that this risk shows symptoms of weakening; hence, the preponderance of cash terms.

The risk in the above report in regard to terms of sale, measures up as follows:

a. Terms tend toward cash, indicating loss of credit standing.

b. The terms are not the usual ones granted in the industries represented in the replies, for it is customary to grant longer terms.

c. The terms to this risk have been modified in such a way as to indicate caution on the part of the sellers.

8. *Manner of payment.*—Under this head, the most important part of the report is embodied. As we have repeatedly demonstrated, the two factors in the credit risk covered by the data in interchange credit reports are willingness to pay and time of payment. The test of willingness to pay is only vaguely and indirectly possible from any credit data, except that which combines direct information indicative of ability to pay with an unwilling customer. This does not imply that a given customer's reputation for business dishonesty may not be deserved, and that it may be corroborated through miscellaneous experiences. It is perhaps not too much to assert that the time of payment is the chief information contributed by an interchange report, with, however, considerable indirect evidence on the willingness to pay.

"Discounts" and their significance.—The three columns under "manner of payment" are headed "discounts," "pays when due," and "days slow," respectively. The question whether the customer discounts his bills offers considerable information on the credit standing of the firm. If the terms of sale are 2 per cent 10 days—net 60 days, it can be proved by simple arithmetic that, if the customer does not take the cash discount, he is paying approximately 14.6 per cent for

borrowing working capital through the use of trade credit. For example, if the terms of sale offered are 2 per cent 10 days—net 60 days, assuming that the current rate of interest on bank borrowings is 6 per cent, and that the bill is for $100, it may be demonstrated that the customer would be paying 14.6 per cent, on his borrowed working capital through the use of trade credit, as follows:

(a) If he borrows to take cash discount:

2 per cent of $100	= $2.00.
6 per cent for $98.00 borrowed from bank for 50 days	= .80.
Net gain by taking cash discount	= $1.20.

b. If he does not borrow to take cash discount:

$100 for 50 days at $2.00 interest by use of trade credit = 14.6 per cent per annum.

The usual manner of indicating the discounts taken by a customer is by placing "X" for the reply. In scanning this column the credit man must be aware that not all terms of sale bear discount privileges. Thus, he must rather seek the proportion of discounts taken to the number of terms that offer discounts. In this case, cash discounts are offered in only two replies, one of which was taken by the customer. *Since cash discounts are a lucrative source of profits for buyers, if they are not taken, the credit man must conclude that the customer possesses poor financial ability or is unable to borrow from his bank.* There are, however, exceptions to this proposition. In a period of boom, when prices are rising rapidly, the customer may have exhausted his line of credit with his bank, and he may not be in a position to borrow in the open market or from other banks. If, under such circumstances, he foresees good profits ahead by "buying in," the excessive cost of using trade credit may be offset by the larger profits possible. This is, however, a practice fraught with danger, and the credit man should play safe when confronted by such indications.

Meaning of "pays when due."—The remarks under "pays when due" should also be considered in comparison with the terms of sale. "When due" invariably refers to the net terms or cash upon arrival of shipment. Needless to say, the

replies under this head are easily interpreted. Again, the credit man should keep in mind the manner of payment of the customer with respect to accounts similar to that of the mercantile house for which this report was made. For evidence may be found that reveals the risk of playing one creditor off against the other. A hard-pressed customer may occasionally discount a bill from each seller in rotation, or he may do the same with the accounts when due, by alternately paying each when due and letting it go over the due date.

"Days slow" and interpretation.—The "days slow" column represents the bad features of a risk. Obviously, slow payments indicate a weak credit worth when only net terms exist, but the position of the customer appears much worse if cash discounts have been offered. In other words, if the "days slow" column shows several replies in the case of only net terms, the risk is poor, but in the case of cash discounts, it is doubly bad. The reason for this inference requires no explanation. Any single report of an interchange bureau must be analyzed with a knowledge of business conditions in respect to the manner of payment. For example, in periods of liquidation and depression, when firms are buying from hand to mouth, or not at all, if they find their shelves overstocked, the replies under "discounts" might be fewer than they would be in periods of prosperity when more extensive purchasing is done. Again, firms find themselves in a different position in regard to paying when accounts are due in good times. When inventories are congested and receivables slow of collection, the payments when due may draw fewer positive replies. The number of replies under "days slow" would then naturally be larger. Furthermore, many strong firms habitually let accounts drag after they have become due, if no cash discount inducements have been offered by the sellers. Nevertheless, on the surface, slow-paying risks should be regarded with suspicion by the credit man, if not from the standpoint of possible credit losses, then at least because slow-paying accounts, even though good, are expensive accounts. The reasons have been given in the earlier pages of this chapter.

Summation of replies analyzed under "manner of payments."—If the case here considered is subjected to analysis in regard to the replies given under the head of "manner of payment," the following features appear:

a. The preponderance of cash terms allows little opportunity to the customer for discounting—only two out of approximately sixteen sales offered cash discounts.

b. Payment when due yields no affirmative replies, even though the majority of reporting members could have replied.

c. The returns on "days slow," including the replies in the remarks, indicate an exceptionally poor paying risk.

d. If there were a possibility for the customer to make good on his obligations in view of improvement in business conditions, the opportunity might not be afforded him, since the claims are burying him with legal involvements. The comments indicate that six creditors are already pressing the customer through legal procedure.

e. Sprinkled through the comments are statements showing that the customer is morally weak. For example, "makes unjust claims," "checks and notes dishonored," "checks protested," and "unsatisfactory account"—all raise the moral question.

9. *Comments.*—The remarks made under this head are, as a rule, highly illuminating. The information contained in the replies usually deals with the following:

a. Any attempt on the part of risk to find new sellers.
b. Progress of claims—collection procedure.
c. Advice on what terms to sell.
d. Trade abuses practiced by risk.
e. Last sale, which should be covered by a special column to follow "how long sold."
f. Lawsuits against customer.
g. Practice of customer in meeting attempts at collection.
h. Change of terms of sales to customer.
i. Regularity of purchases or experience with customer.
j. Time of change in manner of payment of customer.
k. Personal knowledge of managing personnel.
l. Whether risk accepts drafts or gives notes.
m. Size of orders received over certain periods.
n. Chattel mortgages held against risk.
o. Necessity to hold up orders to get payment.
p. Eventual but slow pay.
q. Orders refused.
r. Exceptionally good risk.

The above suggestions have been gleaned from a large number of reports at random. It can readily be seen that the comments may be a veritable mine of credit information. It would improve the quality of credit interchange reports, if members were to give, in the space reserved for comments, whatever information they possess concerning the ability-to-pay factor in the risk. Such additional items would throw light on the customer's financial resources and their quality, as well as upon his business ability.

The nature of the comments in the report under discussion is such as to leave no further doubt concerning its lack of credit worth. It is clearly evident that a credit man should not hesitate to call an absolute halt on any further, or new, orders received from the customer. The risk is not only poor but beyond the possibility of being graded.

Summary of analysis.—The foregoing analysis aims to instruct the student of credit interchange reports in methods of interpretation. The object is: (1) To point out what significance attaches to the replies under the various headings of such a report. In this case, the interpretation was derived from a consideration of the headings from various angles, *some of which had to do with the economic or business conditions surrounding a risk, while others were concerned with estimates of the internal condition of the customer's business, and still others suggested relationships between the risk and the creditors.* (2) To evaluate the various replies given under each heading. A study of these replies revealed the limit to which the principles of analysis developed may be applied as being the degree of completeness shown by the report. The question arises, then, Is the information sufficient to be representative? In most cases it is. The interchange reports rarely succeed in capturing all the creditors of a given risk.

Intelligence required in analyzing reports.—There is danger of reading too much from an interchange report. The line between what the data really tell and what is implied is difficult to draw, and its accurate placement depends largely upon the ability and experience of the credit man. The method suggested is: (1) To understand fully the complete significance of each topic under which information is sought; (2) to determine the nature of the replies under each topic;

(3) to apply the principles deduced under the first step to data in each column; (4) to recognize the fact that the principles are applicable only to the extent that sufficient replies are given; (5) to become thoroughly familiar with the general business conditions within the area where the customer's markets are located, and within the industry to which he belongs.

Analysis of individual items in combination.—Analysis of the foregoing particular risk was presented in order to familiarize the student with the manner of studying interchange reports, attention being given chiefly to the nine headings individually for purposes of illustration. The next step in the development of any such analysis is to consider the data of the several columns in combination instead of individually.

This is the usual procedure of credit men in actual practice. Beginning at this point may be all very well for experienced credit men, but a thorough preliminary analysis of replies in the individual columns is still the wiser procedure for those who are not familiar with their study, and is highly illuminating for those who may want to obtain a deeper insight into the credit standing of the customer, or who wish to know the reasons for the credit standing of a risk, or who are dealing with the report on a risk which appears to belong in the twilight zone, being neither good nor bad. Let us consider the headings of the several columns for replies in an abstract way. First, the business or subnumber heading. Although he is interested in the replies of all the creditors, those in lines of business similar to that of his concern are of more interest to the credit man. Following the nature of the business of the creditors, it would be logical for him to consider the span of each creditor's experience with the risk. This experience might not have been recent—whether it was could be seen from the last sale date. First orders would give him additional clues to the freshness of the experiences. All of this suggests to the mind of the credit man what weight he is to assign to the various replies. This, then, seems to be the first natural grouping of the headings:

1. Business or subnumber (meaning the line of business of the reporting concern).
   How long sold.
   Last sale (if given).
   Unfilled or first orders.

Again, consideration of the length of experience of the seller with the risk, together with the highest amount of a given line of goods sold on time by the creditors and the period within which it occurred, indicates to the credit man the amount of credit he should extend, provided the risk is otherwise acceptable. Therefore, these three grouped together throw light upon each other:

2. Highest credit.
   How long sold.
   Business of creditors.

This question provisionally disposed of, the next which logically occurs has to do with the conditions of payment at time of sales and the manner in which the risk meets these conditions. This is to be discovered from the following group:

3. Terms of sale.
   Manner of payment:
      Discounts.
      Pays when due.
   Amount owing.

Following the manner (3) above of meeting the terms offered, the credit man will wish to know the amount owed by the customer, what part of the amount falls beyond the net terms, and what length of time the obligations have been past due. It would be interesting to learn still further just what effect this tardiness of payment had on the seller. This can be read from the data of last sale and from unfilled orders. This group then is enlightening:

4. Amount owing.
   Amount past due.
   Days slow.
   Unfilled orders.
   Last sale or sold since.

Purpose of scheme above proposed.—Summing up the purposes of the above scheme, we discern in the mind of the credit man the following questions to which there may be many answers: Which are the most valuable? What creditors sold the customer goods similar to ours? If the cus-

tomer is entitled to credit, how much can I grant him? Before I decide that, how does he meet the conditions on payment of goods purchased by him? How much does he owe, how much is past due, and how long? How has his tardiness, or the amounts he owes, caused those creditors to whom he owes most to restrict his purchases or credit? Does the customer in turn seek new firms from whom to buy?

It must be recognized that the analysis of interchange reports cannot be standardized, and our aim must be confined to calling attention to the possibility of planning a logical analysis. The scheme may offer suggestions toward the adoption of a rational method of approach. In all cases, unless the risk is obviously poor, or obviously good, the final decision of the credit man, be his analysis of the report ever so methodical and careful, must rest upon the judgment, good or bad, which he is able to arrive at, based, it is true, on rational study of the data, but concluded only by his ability to grasp the meaning of the evidence as a whole.

Final results of case analyzed by combination methods.—Let us briefly revert to the foregoing case report. Not wishing to retrace the ground already covered, let us survey the combined and partially related replies. Though rather incomplete, the data of the report offers a fairly good basis for a credit judgment:

1. The creditors sold chiefly plumbing supplies, but also related material. Only a few creditors report a lengthy experience with the risk. It is also evident that many of the last sales have not been recent.

2. The largest purchases on time appear to have been from the older trusting creditors, and for plumbing supplies; but it seems that the highest credits have not been granted recently in relation to the date of the report.

3. The risk is not given liberal credit terms—which this line of goods usually carries. The large number of cash sales suggests poor credit standing with the sellers. The amount owing is pretty well distributed among the several types of sellers, indicating that the customer distributes his unpaid accounts. Only one seller offers a discount and that was not taken.

4. As we have seen, the amounts owing apply to older creditors chiefly. In addition, all of the obligations are past

ANALYSIS OF CASE II

Report on a Hardware Company in Nebraska, 9–15–22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
					Cleveland District 2144-8					
Steel	'16'18	$ 6,600	—	—	—	30–2–10	x	—	—	L.S. 5/18
Twst.	yrs.	463	—	—	—	60–2–10	x	—	—	L.S. 8/1/22
Stov.	s. yrs.	12,000	$3,588	—	—	2–10–60	usually	—	—	L.S. 8/8/22
Twst.	yrs.	400	24	—	—	2–10N60	x	—	—	L.S. 8/22
Mfrs.	2/8/21	20	—	$5	—	2–10Px	x	—	—	L.S. 8/18/22
Hdwe.	1920	104	—	—	—	60–2–10	x	x	—	
Mchy.	2 yrs.	173	—	—	—	30–2–10	x	—	—	L.S. 4/28/20
					Chicago District 1590–8					
Hdwe.	—	—	—	—	75	30	—	—	—	1st order
Hdwe.	1915	126	—	—	—	2–10–30	x	—	—	L.S. 7/28/22
Hdwe.	1920	2,500	—	—	—	30–2–10	x	—	—	L.S. 11/20
Hdwe.	yrs.	188	—	—	—	2–15–60	x	—	—	L.S. 8/11/22
L.-S.	s. yrs.	31	—	—	—	10	—	x	—	L.S. 1/22/21
Tools	1919	25	—	—	—	—	—	x	—	
Impl.	yrs.	912	—	—	—	60–2–10	x	—	—	L.S. 6/21/22
Metal	yrs.	300	—	—	126	2–10–30	x	—	—	L.S. 7/31/22
Mchy.	1910	238	—	—	—	60	x	—	—	L.S. 5/31/22
Mill S.	yrs.	153	—	—	—	30–1–10	x	—	—	L.S. 8/10/21
					St. Louis District 819					
A1.....	s. yrs.	4,300	310	—	—	2–210–30	x	—	—	L.S. 8/16/22
Hdwe.	1919	75	—	—	—	2–210–30	x	—	—	1 order

ST. PAUL DISTRICT 5680										
Rbr.	1921	108	—	—	—	30	—	x	—	L.S. 7/1/22
S. & W.....	s. yrs.	2,173	—	—	—	60-2-10	x	—	—	L.S. 7/1/22
EVANSVILLE DISTRICT										
133	s. yrs.	50	—	—	—	2-10-30	x	—	—	L.S. 6/13/22
OMAHA DISTRICT 8-765										
Oil	yrs.	100	5	—	—	Open	x	—	—	L.S. 8/22
Plbg.	yrs.	780	460	—	—	60	x	—	—	
Pt. & Vn.....	(1919)'21	42	—	—	—	2-10-30	x	—	—	Nothing recent
Elec.	1919	15	—	—	—	2-10-30	x	x	—	L.S. 8/28/19
Tire	1919	121	—	—	109	30	—	x	—	L.S. 7/1922
Hdwe.	1920	170	—	—	—	30	—	x	—	
PITTSBURGH DISTRICT 8-26-22										
Mfgrs.	s. yrs.	1,625	—	—	—	60-2-10	x	—	—	L.S. 6/23/22
FT. WAYNE DISTRICT 823										
Misc.	yrs.	2,500	18	—	—	60-2-10	x	—	—	L.S. 8/23/22 Very good customer
KANSAS CITY DISTRICT H-1811										
Steel	s. yrs.	2,173	—	—	—	60-2-10	x	—	—	L.S. 7-1922
Iron	yrs.	900	—	—	—	—	x	—	—	
Hdwe.	yrs.	182	—	—	—	—	x	—	—	
Hdwe.	1910	150	—	—	—	x	x	—	—	L.S. 7-1922
Tire	1 mo.	1,400	—	—	—	30	x	—	—	L.S. 4-1922
ST. JOSEPH DISTRICT VIA KAN. C.										
Pt. & Gl.....	—	36	—	—	—	—	x	—	—	L.S. 6-1921

ANALYSIS OF CASE II (*Continued*)

REPORT ON A HARDWARE COMPANY IN NEBRASKA, 9-15-22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				MILWAUKEE DISTRICT 5150-8						
W. & I.....	1917	300	—	—	156	2-10-30	x	—	—	L.S. 7/19/22
				CINCINNATI DISTRICT 823						
C. & I.....	1922	159	—	—	—	30-2-10	x	—	—	L.S. 6/26/22
D. G. ..... (Bel. 5-)	3 bills	35	—	—	—	2-10	x	—	—	L.S. 5-1922
				GRAND RAPIDS DISTRICT 82522						
Belt	—	49	—	—	—	—	—	x	—	L.S. 1919
				BUFFALO DISTRICT						
———	s. yrs.	425	—	—	—	4-10-30	x	—	—	L.S. 8/22
				DETROIT DISTRICT 824						
Auto. Pt.	yrs.	103	79	—	—	2-10-30	x	—	—	
Mtls.	—	410	—	—	—	2-10-30	x	x	—	Few bills

COMPLETED MEMO.

due and the number of days overdue runs from 90 for the lowest to 480 for the highest. As a result of the slow manner of payment, further sales are being refused, and legal steps are being resorted to in collecting overdue accounts. It would seem that the credit risk in Case 1 is too poor to be accepted.

Case 2 (pp. 54, 55) is a wholesale hardware concern in Nebraska, with both urban and rural customers, but its marketing conditions are governed principally by the fortunes of the agricultural classes. Note that the report is Sept. 15, 1922, the same as that of the previous case. It must be observed that the report on this company includes sellers, or creditors, located in fifteen districts. This means that the concern purchases quite widely and, therefore, that it is necessary for the local interchange bureau to seek answers from creditors through other bureaus.

The analysis of this report presents no difficulty to the credit man. The experiences recorded are quite uniform. The outstanding features of the replies in the respective columns may be summarized as follows:

1. The creditors represent the usual class of mercantile concerns selling hardware lines.
2. Thirty-nine out of the forty-three reporting members give the length of their experience. Twenty report years of experience, ten have had experience longer than three years, and very few show only recent and brief experiences.
3. In the column for comments, the great majority of replies indicates very recent last sales.
4. The highest credit ranges from $12,000 down to as low as $20.
5. The amounts owing are conspicuous for their absence. One large amount appears in connection with the highest credit for stoves.
6. No obligations are past due.
7. Unfilled or first orders are too few to warrant consideration.
8. The terms upon which the greatest number of sales are made are either 2 per cent—10—30, or 2 per cent—10—60. These are regular in the hardware business.
9. The query regarding manner of payment gives rise to

ANALYSIS OF CASE III

REPORT ON A MOTOR COMPANY IN THE MIDDLE WEST, 9–15–22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				CLEVELAND DISTRICT 2380–8						
Mfrs.	yrs.	$ 2,000	—	—	—	30 net	—	x	—	L.S. 5/21
Mfrs.	yrs.	11,000	$11,000	$6,000	—	30 net	—	—	30	L.S. 8/17/22
Steel	2 yrs.	10,000	—	—	—	30–2–10	x	—	—	
Steel	'16'20	5,000	—	—	—	30–2–10	x	—	—	L.S. 3/20
Twst.	yrs.	165	150	—	—	60–2–10	—	x	—	L.S. 7/10/22
Mchy.	2/23/17	313	—	—	—	30–2–10	—	—	15	L.S. 6/3/22
Mfrs.	10/18	7,335	—	—	—	30D	—	—	10	L.S. 5/21
Twst.	12/18	2,850	—	—	—	30	—	x	—	L.S. 2/19
				CHICAGO DISTRICT 3719						
Varn.	4 yrs.	1,500	230	230	—	60–10–2	—	x	—	L.S. 6/22
Pt.	yrs.	584	170	146	—	60–30	x	x	30	L.S. 8/23/22
Mfg.	yrs.	1,200	800	775	—	30–2–10	—	—	30–60	L.S. 8/3/21
Tool	12/20	4	—	—	—	—	—	—	—	Pd. 3/21
Varn.	yrs.	1,800	7	—	—	30	—	—	—	(A) L.S. 9/21
Pts.	yrs.	3,124	983	628	—	Reg.	—	x	30	L.S. 8/24/22
Iron	old a/c	775	—	—	—	10d	x	—	—	
Mfg.	3 yrs.	3,442	1,000	577	—	30d	—	usually	—	
Hdwe.	yrs.	28	—	—	—	2–15–60	—	x	—	L.S. 1/19/22

BUFFALO DISTRICT 205-B

———	.....	sv. yrs.	600	115	55	—	1-10-30	—	—	30-60	L.S. 8/22

NEWARK DISTRICT 830-17

Steel	.....	yrs.	12,000	12,000	7,000	—	30-2-10	x	x	—	(B) L.S. 8/15/22

(A) Gave notes 1921—paid when due—L.S. Sept. 1921.
(B) Amount past due represents July a/c. L.S. 8/15/22.

COMPLETED MEMO.

answers that indicate, almost without exception, that the customer discounts regularly, unless no discounts are offered, when payment is made when due.

10. The customer is never slow.

The foregoing analysis requires little further in the way of comment. This is an ideal risk. The agricultural depression during 1921 and 1922 has left no impress on the affairs of this company.

The report on pages 58, 59 of the motor concern is also dated Sept. 15, 1922. To clear the credit experience, four districts were covered. It might not be amiss to state that the concern is an old one, having weathered all of the vicissitudes of the motor industry's development, and having been forced to meet, in addition, the extreme depression affecting the industry after 1920. A credit man, confronted with a report like the one above, must take into consideration other factors than the bald replies given. But let us first see what evidence the reports afford for testing the credit risk:

1. The line of business represented by the creditors is strictly within the scope of the needs of a motor concern, namely, material and supplies for automobile manufacturing.

2. The company has consistently purchased from the same houses, except that, during the boom before 1920, it sought a few other sellers—perhaps because of the difficulties met with in those years in getting orders promptly filled. The experiences recorded, therefore, ought to suggest authenticity.

3. The dates of last sales, recorded under "comments," indicate that one-half the reporting members sold the risk in 1922. These have been predominantly the sellers of longest experience. The customer has either reduced its purchases in 1922 or has purchased in large lots before that, which—in the light of conditions in the motor market—might mean that the firm was stocked up. However, two heavy purchases were made in August, 1922.

4. The credit limits for the risk have been as high as $10,000, $11,000 and $12,000. As far as can be determined, the largest two were recent (see date of report). The remaining highest credits occurred quite scatteringly, judging by the dates of "last sale" and "how long sold."

5. The terms of sale indicate regularity, although the type varies somewhat. Some net terms appear short for the kind of goods sold, especially since the tendency seems for terms to lengthen during periods of business depressions. This suggests caution on the part of the sellers. The manner in which the risk responds to the terms of sale is also variable. Five replies say that the customer discounts. In all but one case the net terms are 30 days. Four replies may be interpreted to mean that no discounts are taken. Three of these are with net terms 60 days. Naturally, the customer discounts when he can, and discounts less often the bills offering longer net terms. This indicates willingness to pay promptly, but a possible inability to do so. Three replies state that payments are made when due, only when terms are net. The manner of payment of this firm, therefore, is exceedingly erratic.

6. The amounts owing do not seem too large, yet large enough when compared with the highest credits. It appears that the firm had liquidated its indebtedness quite thoroughly. Evidently the largest commitments have occurred recently—perhaps with an optimistic feeling toward the future automobile market. This should suggest caution to the credit man. The amounts past due offer some leads. In all replies except one, the amounts overdue occurred between June and September, 1922, just before this report was made. More than one-half of overdue amounts carried 2 per cent cash discounts. This raises an interesting credit question. The "days slow" replies indicate no really embarrassing condition, but they do indicate a tendency that is not wholesome.

The report concerning this risk is an interesting and instructive one. The risk evidently was very good in the past. The replies under the various heads point to nothing that is very irregular or questionable. The report as a whole, however, gives evidence of two things that deserve attention: (1) The company is incurring considerable indebtedness just before the report is issued. This is undoubtedly due to the heavy losses it suffered in the liquidation and depression period of 1921-1922. These losses may have made heavy inroads upon the firm's cash and reserves. It is now unquestionably beginning to expand its operations, chiefly with trade credit,

ANALYSIS OF CASE IV

REPORT ON A SMALL MANUFACTURER OF IMPORTANT ELECTRIC HOUSEHOLD ARTICLES, LOCATED IN IOWA, 9–15–22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
					CLEVELAND DISTRICT 2643–8					
Mfg.	4 yrs.	$5,000	$3,000	$1,500	2500	30–2–10	—	—	—	(A)
Twst.	yrs.	257	257	202	—	60–2–10	—	—	90	L.S. 8/24/22
Twst.	s. yrs.	30	30	30	—	2–10N60	—	—	—	(B)
Mchy.	7/27/21	6	—	—	—	30–2–10	—	—	120	1 sale
Mfrs.	1921	5	—	—	—	—	—	x	—	Small satis.
								a/c	—	L.S. July
					DETROIT DISTRICT					
Mtl.	yrs.	2,500	—	—	—	30Da T.A. or 30–1–10	—	—	—	(C)
Pt. & Vn.....	1 yr.	172	—	—	—	60D	x	—	—	L.S. 8/20
Mchy.	6 yrs.	30	—	—	—	2–30–60	—	—	—	(D)
					CHICAGO DISTRICT					
Tools	1 yr.	135	—	—	—	2–10–30	—	—	30–90	L.S. 2–1922 Watch closely
Elec.	1911	65	65	65	—	2–10–30	—	—	90–120	Very slow L.S. 6–1922
Hdwe.	1922	113	—	—	—	60–2–10	—	—	60	L.S. 3–1922
Pt.	1921	34	—	—	—	Reg.	—	—	190	L.S. 12/21 Small a/c
Imp.	5 mos.	870	870	845	—	—	—	—	—	L.S. 7/22. No paying exp.
Stov.	1 yr.	56	—	—	—	Reg.	x	x	—	

Hdwe.	1921	5	—	—	—	—	—	—	—	Pd. 3/27/22 L.S. 12–1921
Pt.	—	32	31	21	—	2–10–60	—	—	90	L.S. 7/22
Mchy.	10/21	106	—	—	—	1–10–30	—	—	60	
———	1/22	477	—	—	—	—	—	—	30	
Hdwe.	1920	29	—	—	—	2–10–30	—	—	90	L.S. 7/22
Pt.	1920	603	30	—	—	—	—	—	30–90	Fairly good a/c
					KANSAS CITY DISTRICT					
Ppr.	1921	144	—	—	—	N. C. 10th of Mo.	—	—	90	(E)
Varn.	1916	280	626	626	—	—	—	x	—	L.S. 5/22
					MILWAUKEE DISTRICT					
Off. Sup.	1919	30	—	—	—	n 30	—	—	270	Coll. by atty. L.S. 9/21
					PEORIA DISTRICT (PEORIA)					
Mfg.	1919	150	19	—	—	60D	x	—	—	(F)
					BUFFALO DISTRICT					
———	1916	55	12	—	—	1–10–30	—	x to	120	L.S. 8/22
					CINCINNATI-DAYTON DISTRICT					
C. & I.....	1920	1,033	—	—	—	30–2–10	x	—	—	L.S. 3/22
					EVANSVILLE DISTRICT					
———	2 yrs.	1,000	1,000	800	—	2–10–30	—	—	—	Pays by T. A. L.S. 8/22

(A) No recent experience—prompt up to fall, 1920—recently resumed purchases—L.S. 8/22.
(B) No paying experience since 1920—present a/c dates back to Feb. 1922—we have recently changed terms to C.O.D. L.S. 6/22.
(C) L.S. 5/1922. Disc. a few bills and signed T.A. Last few bills in May signed T.A.S. but did not pay when presented.
(D) From 1916-1920 paid when due—since that time slow 30 days L.S.
(E) Bal. paid by note which was paid when due.
(F) L.S. 8/1922—sold them nothing since 1920 or 1921.

COMPLETED MEMO.

and with a hopeful feeling for the future sale of its products. (2) The company, in adopting such a policy under the circumstances as described, has found difficulty in making prompt settlements. This may be due to a depletion of stocks and insufficient time to fabricate, sell, and collect the proceeds from its operations. It must be remembered that when a firm initiates operations after a period of shut-down, or when it increases operations, the income from sales is at first somewhat delayed. After the increased operations are well under way, a better coördination between income and outgo can be effected. It might be possible that the interchange report caught this company at an unfavorable moment in this respect.

The credit man's attitude toward this risk should be cautious. Much depends on the accuracy with which the motor company has forecast future conditions in the automobile market. In the final analysis, the credit man should pit his knowledge of the trend of business conditions, especially in the automobile industry, against the opinion held by the motor company. Since the credit man must really be a prophet, what he will do with an order from this concern depends on how adequately he is prepared to prophesy what the risk will do on the basis of what it has already done. This risk might be accepted if orders are conservative in amounts, but it is a risk that requires careful watching to apprehend unfavorable developments.

Economic setting of risk.—Case 4 (pp. 62, 63) is presented, because it demonstrates some highly important but often neglected elements in the analysis of a credit risk. We hope to bring these to light without too much detail. Let us look at the background in which this risk is set. It is located in a small city of Iowa. The product finds its chief market among the rural and urban households in Iowa and neighboring states. The purchasing power of these households fluctuates with the incomes derived chiefly from agricultural pursuits. Electric plants have developed in number and sphere of service. One example may be cited in the harnessing of the Mississippi at Keokuk and the resulting enormous areas over which electric current is distributed from power plants at that point. In addition, local plants and Delco systems have given every farmer and urban dweller the opportunity to use electric power. The tremendous increase in the use of elec-

tricity in homes during the prosperous agricultural years prior to 1920 needs no retelling. Then came the severe curtailment of rural incomes in 1920 which continued up to the date of the report, Sept. 15, 1922. This manufacturing company expanded along with the growth in demand for its product. When the volume of sales shrank sharply in response to the general situation, the firm found itself in the position of the great majority of concerns at that time, with huge overstocks of inventories, an overlarge plant, recurring overhead expenses, and a much smaller demand for its product. Its credit worth, as in all such cases, was weakened accordingly.

Analysis of report on risk.—What happened to this firm may easily be gathered from its report without going into a detailed analysis. Furthermore, single interchange reports give little history directly and much must be inferred. These inferences are the privilege of the credit man when no complete information is available. Turning to the remarks, first (A) replies, "No recent experience—prompt up to fall, 1920—recently resumed purchases—last sale August, 1922"; (B) "No paying experience since 1920—present account dates back to February, 1922—we have recently changed terms to C.O.D.—last sales June, 1922"; (D) "From 1916-1920 paid when due—since that time slow 30 days;" (E) "Balance paid by note which was paid when due"; (F) "Last sale, August, 1922—sold nothing since 1920 or 1921." Supplementing information is at hand in the replies in the body of the report. (A), who made the above comment, sold the risk for four years, with the highest credit, (D) sold for six years, and (E) for three years. These few remarks, considered in the light of the difficult business conditions under which the firm operated in the later years, induces the opinion that the moral risk is good.

Again, considering the highest credit granted the customer, several points are noticeable. The largest figures generally appear in the replies with long experience. This fact, combined with the accounts owing, indicates that the present indebtedness cannot be regarded as abnormal. These debts, too, have been only recently incurred, while the accounts past due, with five creditors, are of rather conservative magnitude. In fact, these creditors have recently made sales to the risk. The manner of payment indicates slowness, beyond doubt.

Discounts have not been regularly taken and the bulk of the evidence in the replies under "pays when due" and "days slow" is unfavorable. Nevertheless, the creditors are selling to the risk. One may believe that the unfavorable replies have been prompted by the experience of the creditors during the two preceding years of depression. A credit man will draw the conclusion that the risk was considered good before 1920. Again, the question recurs which arose also in the analysis of the previous case—Is the risk slowly and actually improving? Any improvement in the purchasing power of the agricultural classes would operate for the good of the firm, and an ear in that direction might help the credit man to form a reasonably accurate judgment. The distinctive feature in this report, which is unfavorable to the risk, is his slowness of payment. One reason for this has been touched upon, namely, that the creditors have drawn on their experiences during the depression. The credit man should remember certain other offsetting factors: (1) The difficult position of even a strong firm during depression, especially, if its markets are localized so that they are dependent on the fortunes of one industry—in this case, agriculture. (2) That the terms of sale quoted in the replies may have been shortened, because of caution, whereas, in a period of depression, they would have grown presumably more liberal. In addition, incomes of rural households are highly seasonal, usually bulking largest in the fall of the year, while sales of expensive household equipment are often made on installment or long-time plans of payment. These factors might help the credit man to see more clearly the elements in the risk and arrive at a closer approximation of the credit worth of the firm.

The credit judgment.—In the light of the above analysis, credit judgment should pronounce this a fair risk. This judgment is based on the following:

A. The concern has experienced great difficulties during the agricultural depression.

B. It evidently has been able to withstand the strain on its financial resources.

C. The moral element in the risk seems good and the manner of payment reflects past untoward economic circumstances.

D. Former creditors are proceeding cautiously in accepting further risks.

E. The concern is resuming purchases and is receiving credit.

F. The indebtedness is not high in comparison with the volume of credit received.

G. The overdue accounts do not seem burdensome.

H. Recent purchases indicate that the concern is experiencing a revival in the demand for its products. This coincides with the improving conditions in agricultural incomes toward the latter part of 1922.

The risk, then, could be accepted for conservative lines of credit and with a careful watching of its future tendencies.

Limitations of single reports.—Outside of incomplete or indefinite replies, the principal limitation of a credit interchange report is that it presents entirely too static a picture of the elements in a credit risk. It is true that, by a detailed analysis and a careful interpretation of the replies, one can glean some information as to the quality of the risk in the past and as to its possible future tendency, especially if the trend of business conditions generally and within the industry are taken into account. But even such an analysis fails to bring out the vital elements in the risk, namely, What is the credit worth likely to be when the obligation matures? Credit interchange reports would be of greater value if the successive reports on a given risk were compared over a period of years. This may be called comparative analysis of interchange reports and will be discussed in the next chapter.

CHAPTER III

COMPARATIVE ANALYSIS OF INTERCHANGE REPORTS

Reasons for comparative analysis of interchange reports.—There are two cogent reasons why a comparative analysis of credit interchange reports is not only desirable but almost indispensable: (1) the credit man desires to support for his firm the largest volume of business compatible with safe credits; (2) he desires to obtain, and should aim at obtaining, as many satisfactory customers as possible, by granting them just credits, that is, credits commensurate with their real credit worth.

Why it is not always done.—Credit men, as a rule, do not make a comparative analysis of reports in order to obtain knowledge of the progress of a risk, or to gain a necessary insight into the elements in a risk which may be contingent upon the various stages of the business cycle. There are several reasons why this necessary part of a credit analysis is neglected. First, credit men do not always have at hand the former reports made by a bureau on the same risk. Such back reports can usually be obtained, however, for, in most cases, unless the customer is a very recent addition, the bureau has received a sufficient number of inquiries from members, in the past, to create cumulative files of these reports. Besides, the credit man should practice self-help, by asking, from time to time, for a reciprocal report on a risk, and also by filing the back reports on inquiries he has made. Second, credit men do not usually look for information beyond what a single credit interchange report contains—either because they are unaware of the importance of a comparative analysis of reports over a certain period, or because they are not familiar enough with the factors that operate in the various stages of a business cycle or with its influence upon the credit risk.

Single interchange reports insufficient.—Reliance on a single interchange report for an adequate analysis of the risk is, in the first place, invariably insufficient. Single reports do not present cumulative information in all respects. Most of the replies are based, as a rule, on recent experiences and, even when references are made to experiences in the past, the dates are often vague and sometimes absent altogether. Let us cast a glance over the respective headings of an interchange report. "Business or sub number" alone merely gives the nature of the business. "How long sold" indicates at least the period over which experience has been gathered; but it does not tell when the experience was gained, which is contained in the other replies. "Highest credit" might have been given any time within that experience, for no other interpretation of this item is, as a rule, permissible. "Amount owing" is a factor of the present, although the debts may have accumulated in the past. The replies do not state what amounts have been owed at various times in the past. "Amount past due," even when taken with the "days slow," gives only a static picture. "Unfilled or first orders" offer nothing but current information. "Terms of sale" invariably are current. In most industries the terms of sale are highly standardized and vary little over a period, except in cases where the risk itself might provoke a change. Nevertheless, in many competitive lines of trade they do show a great variation. "Manner of payment," the chief item for attention in an interchange report, generally indicates the present or current status, except in so far as it is modified by the remarks under "comments." Whatever dynamic information a report contains is usually found in the "comments," but these again are limited.

The element of futurity in credit risks.—Credit risks are projected into the future, when debts mature, when the actual payment of them is to be tested. To grant credit is to presage future conditions affecting a credit risk. The guide for the future is to be found in the past as well as in the present. The questions are not only Will the debtor pay? and Will he pay when due?—answered on the basis of his past and present conduct—but also Will he be able to pay?—answered on the basis of the past phases of the business cycle, in the light of present, and probable future, stages.

Credit risks in light of changing business conditions.—To judge a credit risk properly is to judge it in relation to the current stage of the business cycle and to the influence of that cycle upon the industry to which the risk belongs. As a corollary, the risk must be judged also in relation to the seasonal influences to which it is subjected throughout a year.

Very few business concerns remain unaffected by the oscillations of the business pendulum, in point of variations in selling and cost prices, sales, etc., and those few are negligible from the standpoint of credit analysis. The variations that generally occur have been concretely illustrated on page 110 et seq., Chapter iv, and pages 373 to 377, Chapter xiii, and these could be found for the internal cycle of almost any business concern. It is true, that not all business concerns pass through the same cycle both in time and degree, but they do evidence an internal cycle, preceding or lagging, as the case may be, in relation to the general business cycle.

Credit interchange reports reflect business conditions.—The business conditions above referred to will be more adequately treated in the following and later chapters of this book. It is our purpose at this time to develop further the method of analyzing credit interchange reports in the light of those conditions. The two cases (III and IV) analyzed in the previous chapter illustrated certain interesting aspects of the credit risks involved, which had to do primarily with the evident influence of business vicissitudes upon the replies given and the credit judgment rendered. Suppose that a firm was emerging from a period of depression, as was the fact in some of the above cases, the single report analysis would shed an unjust light upon the credit standing of the customer. Again, a report might overtake a firm at the culminating stage of good times, when the replies are still surcharged with the psychology of business booms, affording the unwary credit man an excellent opportunity to be dragged under in the subsequent inevitable reckoning.

Possibilities of making comparative analysis of reports.—Now what are the possibilities of making a comparative analysis of several credit interchange reports in a risk with due regard for the several stages of a business cycle?

It is not necessary to repeat at this point that the individual report presents only a static picture of the risk just as does a single financial statement, as will be shown in Chapter viii. The first necessity, then, in making such an analysis is the possession of an adequate number of reports. These will be available, as previously pointed out, if the credit man has kept on file all former reports of regular customers, if he has revised his files from time to time, if he resorts to reciprocal reports on irregular customers, or if he has recourse, in the case of new customers, to the files of the Credit Interchange Bureau. For the purpose of comparison, the several reports used need not contain replies from the same members or creditors. The fact that, from time to time as inquiries were made, different members may have furnished the replies does not destroy the comparative quality of the reports. In the first place, it would be highly improbable that the customer would continue to buy from the same members, and the experience of one creditor, who no longer serves the risk, must be supplanted, therefore, by that of a new member. As a whole, successive interchange reports on a given risk offer a quite unbroken line of credit experiences, and sufficient ground for comparison is thus maintained over a period of time. The second necessity is the inclusion in the reports used of a period covering at least two business cycles, and more if it is possible.

There are, however, limitations as to the period that can be covered, and these arise from the number of reports that can be had. The third necessity is the selection of reports, if a large number are available on a given risk, so as to have a report for each phase of the business cycle, or of the cycle of the industry to which the risk belongs. The number of available reports will, of course, condition the selection; but, provided these are sufficient, if the credit man is, and he should be, familiar with the phases of the general business cycle and with those of the industry to which his firm belongs, he ought not to have difficulty in selecting a group of properly timed reports for progressive comparison. In conclusion, it is possible to fulfill the conditions upon which a proper comparative analysis of interchange reports on a given risk hinges by the following:

1. Possession of an adequate number of reports, sufficiently complete, whether or not the members are the same.
2. Reports that embrace two or more cycle periods, preferably, although one complete cycle may suffice.
3. Reports selected upon the basis of separate phases (depression, revival, prosperity, liquidation) of the business cycle.

Advantages of other comparisons of interchange reports.—Before taking up the demonstration of this procedure, it might be instructive to call attention to other possibilities in this connection. Besides the comparison of reports on a given risk over a period of time, for the purpose of apprehending the progress of the risk and obtaining a better understanding of its economic setting, comparison of those reports on other risks in similar lines of business may be advisable. Furthermore, reports on customers located in a given area and subject to similar economic and business influences might be compared profitably with reports on customers doing business in other areas, where conditions are governed by other circumstances. Such a sectional comparison offers the mercantile credit man a deeper insight into conditions affecting the credit standing of the customers; and, since the bank credit man is in a more favorable position to survey credit conditions through the information coming to the bank, such studies should be an invaluable aid in securing knowledge of fundamental credit conditions upon which to base bank credit policies, both with regard to the general trend of business conditions and to the control of, and advice to, individual risks.

Comparative analysis of credit interchange reports illustrated.—The case chosen for this illustration is that of a food and grocery store located in Youngstown, Ohio. There are several features of this report that require comment. The last report, made on Sept. 15, 1922, caused several of the mercantile credit men for whom the report was made to rate the risk as poor and to advise the sales departments to refuse further orders. During the summer and fall of 1922, business generally had begun to recover from the deep depression of 1921, and, even in the first few months of 1922, wholesale prices, it must be remembered, had begun to show improve-

ment following the low point reached. Physical volume of business in the fields both of production and trade had passed its nadir during the fall of 1921. In spite of this tendency, however, the feeling among business men was one of caution. This firm, moreover, is located in a steel-producing city. Its customers rely chiefly on the steel industries for their income and, therefore, their purchasing power is dependent on the fortunes of those industries. The data pertaining to the trend of the conditions in the steel industry in the fall of 1922 would indicate that it was reviving, such indices as unfilled orders pointing to still further increase in activity during the rest of that year. Employment and wages were also on the increase. These favorable factors were present not only in the steel business in general, but particularly in the Youngstown district where the store was located. With these general circumstances as the economic setting for the risk in the fall of 1922, let us study the report of September 15, 1922, together with the three previous reports, all of which are shown on pages 74-78.

Relation of reports to different phases of business cycle. —The dates of the four reports are Sept. 15, 1922, June 10, 1921, Nov. 2, 1920, and Jan. 11, 1919. These reports were selected, because each was made at a significant phase in the business cycle. January, 1919, was about the middle of the post-armistice interlude in business activity, occurring because of the loosening of government war control over industries, and because of the cessation of government price-fixing. Production, trade, and prices had to seek, therefore, their competitive levels through a readjustment. In the spring of 1919, this readjustment had been completed to a sufficient extent so that the post-armistice boom got under way and waxed into the intense business activity which culminated in the crisis of the fall of 1920. The second report was made at approximately the closing period of cumulation of prosperity. This was succeeded by the report of June, 1921, at the time of the acute business depression. The last report, in the fall of 1922, appeared when business activity had slowly emerged from the depression and seemed again to be on a definite upward swing.

JONES COMPANY

YOUNGSTOWN, OHIO, 9–15–22

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				CLEVELAND DISTRICT 2490–8						
Dry Gds.	'20	$ 500	—	—	—	—	—	—	—	Sold at sale OK.
Ppr.	SI 10/4/21	123	$ 63	$ 19	—	60–2–10	—	—	30	
Seeds	1 yr.	280	150	35	—	1% 10N 30	—	—	10–20	L.S. 8/25/22
Cmry.	3 yrs.	2,500	—	—	—	Mthly.	—	x	—	L.S. 3/10/22
				YOUNGSTOWN DISTRICT						
Groc.	yrs.	8,250	5,253 2,000 note	—	—	—	—	—	10–20	
Gros.	yrs.	240	240	240	—	30	—	—	—	30 da. past due
Crmry.	yrs.	520	520	—	—	—	—	—	—	(A)
Dec.	1 yr.	400	400	200	—	2–10–30	—	—	90	(B)
Pckr.	1 yr.	500	416	201	—	7–30	—	—	10	
Groc.	1 yr.	700	265	157	—	30DA	—	—	30	
Hdwe.	Oct. 20	170	125	41	—	30–2–10	—	—	30–60	
Dec.	4/7/22	110	—	—	—	—	—	x	—	
Equip.	2 yrs.	33	—	—	—	2–10–30	—	—	30	
Print.	11/20	74	28	26	—	30	—	—	30–60	
Feed	—	625	609	400	—	—	—	fair	—	
Conf.	6/20	67	38	—	—	30	—	x	—	Very good a/c
Groc.	1–2 yrs.	1,459	1,217	957	—	30	—	—	30–45	
Lbr.	1 yr.	600	700	550	—	30	—	—	3 mos.	

Crmry.	6 mos.	500	—	—	—	7	—	x	—	(C)
Groc.	—	172	—	—	—	Reg.	—	—	30–60	(D)
Sups.	1/21	154	36	30	—	—	—	—	2–3 mos.	
Pckr.	yr.	150	135	101	—	7	—	—	10	
Fd. Prod.	2/21	85	69	7	—	—	—	—	—	Slow
				TOLEDO DISTRICT						
Coff.	8/17/20									
	8/11/22	494	494	294	—	Reg.	—	—	30–60	
				PITTSBURGH DISTRICT						
Pickles & Preser.										
Ves.	9/21	40	—	—	—	2–10–30	—	x	—	One sale

(A) This is for one month purchases.
(B) Very slow pay—have to insist on payments or they let them drag along.
(C) This account was very satisfactory.
(D) Have not sold since Dec., 1920—at that time slow.

Court House Records:

12/19/21 Chattel mtge. to Display Doughnut Machine Co. $900.00.
1/27/22 Suit filed by Nora Shopp, damages in Common Pleas Court.
3/14/22 Suit filed by Ruby Cox, damages in Common Pleas Court.
6/22/22 Chattel mtge. to Thomson Machine Co., cons. $940.00, terms 10 mos.
8/ 7/22 Chattel mtge. to Hobart Mfg. Co., $480.00.

COMPLETED MEMO.

JONES COMPANY

YOUNGSTOWN, OHIO, 6–10–21

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
Cmry.	2 yrs.	$2,500	$1,650	$1,250	—	E.O.M.	—	—	90	L.S. 2/8/21
Hdwe.	1 yr.	300	150	150	—	2–10–30	—	—	30–40	L.S. 10/6/20
Feed	—	625	—	—	—	30D	—	x	—	Not sold recently
Print.	1 yr.	—	—	—	—	30D	—	—	—	
Coff.	1½ yrs.	300	250	50	—	2–10–60	—	—	20–60	Slow
Fd. Prod.	1 yr.	—	600	600	—	—	—	—	1 yr.	(A)
Seeds	yrs.	400	200	100	—	1–10–30	—	—	8 mos.	Unsatisfactory
Groc.	1½ yrs.	5,525	3,250	2,000	—	2–10–30	—	—	90–120	Slow but pays
Pck. R.	2 yrs.	800	800	400	—	2–10–30	—	—	60	
Groc.	yrs.	240	40	40	—	30D	—	—	30–60	L.S. 12/1/20
Cmry.	yrs.	520	500	450	—	Monthly	—	—	10	
Groc.	yrs.	8,250	5,000	2,750	—	2–10–30	—	—	4 mos.	(B) Slow
Hh. Gds.	1 yr.	500	—	—	—	—	—	x	—	
Conf.	1½ yrs.	—	60	50	—	30D	—	—	60	
Sup.	—	—	—	10	—	30D	—	x	—	
Seeds	2 yrs.	600	300	250	—	1–10–30	—	—	6 mos.	L.S. 10/6/20
Pickles & Preser..	2 yrs.	60	60	60	—	30D	—	—	30	
Hdwe.	2 yrs.	200	100	75	—	2–10–60	—	—	9 mos.	(C) Hands of atty.
Feed	—	—	—	—	—	—	—	x	—	
Lbr.	3 yrs.	800	800	800	—	Reg.	—	—	1 yr.	Slow

(A) Hard to collect.
(B) Before end of 1920 good—since slow.
(C) We have put account in hands of attorney.

JONES COMPANY

YOUNGSTOWN, OHIO, 11-2-20

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				CLEVELAND DISTRICT						
Hh. Gds.	'20	$ 500	$ 450	$ 150	—					
Cmry.	1 yr.	2,500	1,000	750	—	E.O.M.	—	—	10D	(A) L.S. 10/15/20
Groc.	yrs.	8,250	7,600	6,000	2500	30D	—	—	60D	Acct. good
				YOUNGSTOWN DISTRICT						
Groc.	yrs.	240	—	—	—	—	—	x	—	L.S. 10/19/20
Crmry.	yrs.	520	225	200	—	—	—	x	—	L.S. 10/18/20
Hdwe.	Oct. '20	170	—	—	300	2-10-30	x	—	—	L.S. 9/20/20
Equip.	Sept. '20	33	—	—	—	2-10-30	x	—	—	
Print.	New	74	74	—	—	30D	—	x	—	
Feed	—	625	625	50	100	60D	—	x	—	L.S. 10/1/20
Conf.	6/20	67	—	—	—	30D	—	x	—	
Groc.	—	100	75	—	—	30D	—	x	—	(B)
Sups.	11/19	54	50	—	—	E.O.M.	—	x	—	
Fd. Prod.	2/20	50	—	—	—	—	—	x	—	
Coff.	8/17/20	300	150	150	—	2-10-60	x	—	—	
				PITTSBURGH DISTRICT						
Pickles & Preser..	2/20	40	—	—	—	2-10-30	x	—	—	
Seeds	yrs.	400	200	100	—	1-10-30	—	—	40D	L.S. 10/12/20
Hdwe.	1 yr.	200	100	—	—	2-10-30	—	—	90D	L.S. 8/15/20
Lbr.	2 yrs.	800	800	800	600	30D	—	—	60D	Always paid on time
Groc.	6 mos.	5,525	2,500	1,500	800	30D	—	x	—	L.S. 9/27/20
Pckr.	1 yr.	200	100	—	—	7-30	—	x		

(A) As a rule prompt.
(B) Slow at times.

JONES COMPANY

YOUNGSTOWN, OHIO, 1-11-19

Business or Sub No.	*How Long Sold*	*Highest Credit*	*Amount Owing*	*Amount Past Due*	*Unfilled or First Orders*	*Terms of Sale*	*—Manner of Payment— Discounts*	*Pays When Due*	*Days Slow*	*Comments*
				CLEVELAND DISTRICT						
Cmry.	New	$ 500	—	—	—	E.O.M.	—	x	—	Very good a/c
Pckr.	1 yr.	200	$ 100	—	—	7-30	—	x	—	L.S. 12/6/18
Groc.	yrs.	3,650	2,000	$ 400	—	30D	—	x	—	(A)
Lbr.	2 yrs.	350	350	—	—	30D	—	x	—	(B)
				YOUNGSTOWN DISTRICT						
Coff.	1 yr.	300	—	—	—	2-10-60	x	—	—	One sale
Hdwe.	Oct. '18	—	—	—	—	2-10-30	x	—	—	
Feed	9-18	275	125	25	—	—	—	—	10D	
Print.	New	74	—	—	—	—	—	x	—	
Preser. & Pickles.	2 yrs.	—	—	—	—	2-10-30	x	—	—	
Groc.	yrs.	2,600	1,000	195	—	Reg.	—	—	30D	(C)
Conf.	June '18	80	—	—	—	30D	—	x	—	
Fd. Prod.	1 yr.	—	—	—	—	—	—	x	—	
Cmry.	2 yrs.	800	—	—	—	Monthly	—	x	—	L.S. 12/15/18
Cmry.	6 mos.	90	—	—	—	—	—	—	10D	

(A) As a rule pays when due.
(B) L.S. 7/18.
(C) We consider this a good risk.

Data on business conditions.—The following indexes bear witness to the recovery in the steel industry and employment:

INDEX OF VOLUME OF MANUFACTURERS OF IRON AND STEEL, COMBINED *

(*Normal = 100 Per Cent*)

	1921	*1922*
Jan.	87	60
Feb.	74	66
Mar.	50	72
Apr.	46	84
May	44	89
June	41	92
July	36	93
Aug.	40	74
Sept.	40	80
Oct.	46	92
Nov.	52	98
Dec.	58	100

* E. E. Day, "Cyclical Fluctuation of the Volume of Manufacturers," Harvard Review of Economic Statistics.

INDEX OF EMPLOYMENT *

Industry	*In June, 1920*	*In July, 1921*	*In July, 1922*
Metals, etc.	55	41	52
Iron and Steel	25	19	21

	U. S. Bureau of Labor (12 Industries)	*Wisconsin*	*Illinois*	*Massachusetts*
	1922	*1922*	*1922*	*1922*
Jan.	79	91	95	—
Feb.	79	91	95	—
Mar.	76	93	96	—
April	76	96	96	—
May	78	99	99	—
June	80	103	—	—
July	84	101	99	—
Aug.	84	103	100	—
Sept.	85	104	102	100
Oct.	89	105	104	102
Nov.	89	109	105	105
Dec.	91	113	107	104

* William A. Berridge, "Industrial Employment in the Present Business Cycle," Harvard Review of Economic Statistics.

Regarding the steel industry further the following is presented:

Federal Reserve *Bulletins,* Sept., 1922, p. 1040: "Most industrial plants in District No. 4 (Cleveland) were operating at close to capacity and consequently unemployment has been reduced to a very low level." Dec., 1922, p. 1406: "Report from District No. 4 (Cleveland) states that employment is increasing at iron and steel mills, machine shops and rubber factories."

Federal Reserve *Bulletin,* Aug., 1922, "While District No. 4 (Cleveland) states that in some lines, particularly certain types of steel bars, deliveries on new orders require three to four months," Sept., 1922, "District No. 4 (Cleveland) states that orders for 13,700 railroad cars were placed during July and that locomotive orders have also been large," "reports indicate that large orders for steel rails have been placed in September, since the announcement of an increase of $3 per ton in rail prices, effective Oct. 1."

Procedure in determining conditions underlying reports.—Such indexes as these of the trend of business conditions generally, in particular localities, and in particular industries, are regularly available to the credit man, and any analysis of credit interchange reports should be made with reference to them as a statistical basis. The procedure in analyzing the business conditions which affect a credit risk may be outlined as follows:

1. Determining the stages of the business cycle at the time of investigation and forecasting as nearly as possible the phases within which the debt may fall due.
2. Determining the relation between the particular cycle of the industry to which the risk belongs and the general business cycle and its phases.
3. Determining, if necessary, the special situations surrounding the business of the risk, and how this modifies the reaction of the risk to both the general and industry cycle.

Analysis of latest report of case here submitted.—Since the usual manner of testing a risk is to begin with the most recent report, our approach to the analysis of these interchange reports might be more in accord with the practical procedure if we analyze first the report of Sept. 15, 1922,

working back to former ones if uncertainties as to the nature of the risk develop. As previously noted, the risk was judged a poor one on the basis of this report, and certainly the replies contained therein seem to support such a conclusion. The creditors are nearly all sellers of food lines, though some few represent hardware and lumber. Of this list of creditors, only a few have had more than a year or two of experience with the customer. It is also evident that the risk has sought credit quite generally. The highest credit extended seems to have been for grocery and creamery products and from firms of several years or more of experience. Comparing the amount owing with the highest credit figure, and judging these in relation to the lines of business represented by creditors, we discern a rather unfavorable situation. The indebtedness seems quite high and quite general. The period represented by this report should have shown a lower indebtedness, liquidation of old debts, and a better cash position. The replies under "amount past due" offer interesting clues to the indebtedness. The amounts are not really large, if compared with the amounts owing, or with the highest credit, though a note for $2,000 appears in connection with the largest obligation to a single firm, which, while not listed as a past-due account, must be so considered. In practically all cases, amounts past due are smaller than those reported owing, indicating that the firm is meeting its debts. Two explanations for this situation suggest themselves. First, the firm may be stocking up for fall business, or it may expect an increase in sales on the basis of improvements in the steel industry and business generally. It is purchasing heavily on credit, and it is true that its cash position is not as strong as it should be. Second, it may be saddled still with old debts contracted in the period of boom a year and a half or so before. To determine which of these explanations is the more plausible, let us refer to the terms of sale, which determine the conditions of purchase. Nearly one-half the terms carry a cash discount. But the customer is evidently not taking cash discounts—which further goes to prove that he lacks cash. Only a few replies state that payment is made when due, and only one of these is given on the basis of adequate experience, the remaining answers representing either new creditors or small amounts. The "days slow" column makes a bad showing. It is evident from

these replies that this customer is unable to pay promptly. However, as previously pointed out, if the "days slow" apply only to the amounts past due, and the latter are compared with the amounts owing, the risk does not appear so poor as one might believe at first. Old debts contracted in the previous boom seem to have been taken care of, which would indicate that, lacking sufficient cash, the firm must now rely more on trade credit. Especially would this be true if the first of our two possible explanations is correct—that he is now stocking up inventory. On the basis of the probable trend of business conditions, which perhaps influences the sales of this concern favorably, we may assume that the risk is not so poor as the report indicates.

Comparison of last with previous reports.—In order to find out, if possible, what the policies of this firm were in 1920, just before the business revival culminated, and what its credit position was at that time, let us turn to the interchange report, dated Nov. 2, 1920. It is evident that the line of purchases is similar to that in the fall of 1922. Comparing this report with the one just analyzed, we discover several significant features. First, assuming that the replies in all of the reports are representative, the highest credit quoted in the replies of the 1922 report seems to have been incurred before Nov. 2, 1920, and after the report of Jan. 11, 1919. Second, from the increased purchasing evident, we gather that the firm expanded rapidly throughout 1919 and 1920. Especially during the fall of 1920 do the comments point to heavy buying just before the peak of rising prices was reached, and we can discover symptoms of overbuying and overstocking. Amounts owing in the majority of cases approximate the highest credit. Amounts past due are creeping up, and the "days slow" already indicate difficulty in moving stocks and meeting obligations, or small effort in that direction. The unfilled orders cited are subject to two explanations: either the creditors are exercising caution or they are unable to fill the orders—a common situation in the later months of the boom of 1920. To go back still further, the report of 1919 shows us a clear record: the firm is paying and discounting; the replies indicate a good risk. By reverting again to the 1920 report we can trace the change in its credit position—the expansion policies adopted, the stocking

up of inventory, the attitude of speculating on the probable continuance of a sellers' market, the heavy indebtedness and lagging payments, conditions which, when considered in the light of a possible and very probable recession in business activity, should have sufficiently warned creditors. This lack of wisdom behind this customer's policies, in the latter part of 1920, can be clearly apprehended, together with a picture of the acute depression gripping business generally, in the report on June 10, 1921. The report indicates that the risk is staggered by the forces of depression. The replies as to highest credit, amounts owing, and amounts past due, all warrant the definite conclusion that the firm finds itself with congested inventories, overdue payables, and difficulty in settling even within reasonable periods. The "days slow" column shows overexpansion, and the comments indicate the creditors' dissatisfaction with the slow manner of payment. Fortunately, the firm deals in necessities—a line of goods which will surely meet a demand in the future unless they spoil on the shelves. Yet, although the inventory may be positively salable in time, losses will accrue, since depreciation in goods, expense of carrying stocks, and falling selling prices will occur in view of previous overpurchases at high prices. The progress, however, is evident, when the report is compared with the last one. The firm has proved that it is able to pull itself out of the financial difficulties into which its policies and business conditions have forced it.

Conclusions drawn from comparative analysis of reports.—From the above analysis, several conclusions may be drawn:

1. The customer has had to meet heavy losses in 1921, as a result of speculating in inventory in the dangerous period of 1920.
2. These losses have encroached upon the customer's cash resources.
3. The necessary consequence of this is that the customer is using trade credit more freely in 1922. But it is evident that the proportion of past-due amounts to amounts owing is smaller in 1922 than in 1921.
4. It is also evident that the customer is again engaged in buying heavily for a buoyant future market expected in the latter part of 1922 and the early part of 1923. The pro-

portion of amounts owing is high in relation to the highest credit, but low in relation to past-due amounts, if the latter is compared with 1921. In comparing the amount of indebtedness shown in the most recent and earlier interchange reports, it is absolutely necessary to take into account the normal growth in a firm's sales. A firm will show a normal or long-time increase in sales which might assume large proportions during a four or five year period. It follows that the debts might be larger as shown by the interchange reports.

5. The risk is not so poor as the single report of 1922 would lead one to believe. The customer should be warned against overstocking, even though the recovery in the steel industries might warrant forward purchasing to some degree. There seems to be good evidence that the risk might show considerable improvement in the near future. As modified by a comparative analysis of all the reports, on the basis of the 1922 interchange report, credit could still be granted to this firm, provided the risk is carefully watched to apprehend unfavorable developments.

Summary of Steps in Analyzing Credit Interchange Reports.

In this demonstration of the analysis of credit interchange reports, we have taken the following steps:

1. Discovered the meaning of each heading in the report.
2. Interpreted the possible variations in replies in the light of changing business conditions.
3. Analyzed the replies under each heading.
4. Analyzed the replies under the various headings in combination.
5. Made a comparative analysis of several reports over a period of time.

Chapter IV

CREDIT RISKS AND THE BUSINESS CYCLE

The business cycle.—Neither business activity nor the status of the credit worth of a risk continues at any given level or at any steady rate of increase for a long period. Because incomes and expenditures of business concerns, as of households and individuals, never remain the same at all times; the prospective incomes and expenses are equally subject to change; the volume of business and of production in general, as of nearly all business enterprises, grows from year to year, not steadily, but in a series of spurts, each of which is followed by a check or a decline; prices of things bought or sold, and of the various items in business expenses, such as borrowed funds, labor, leases, upkeep, etc., swing up and down in a similar fashion, and all of these alternations of activity and depression constitute what is generally known as the business cycle. *A business cycle is a series of business events operating cumulatively, constantly recurring at intervals of varying lengths, and different degrees of intensity.* In various details each business cycle presents its own peculiar characteristics, yet, in most fundamental elements, all cycles are very much alike. For the credit man these business vicissitudes have an important credit significance, for, as said before, no credit risk can be adequately judged without reference to the stage of the business cycle and to the relation of the industries to which the risk belongs. The inferences to be drawn from a comparative analysis of credit interchange reports point directly to these cycles to which the debtor concern is subject. The relation will be, perhaps, more obvious when we come, later on, to the analysis of credit statements. Meantime, an outline of the stages of the business cycle with the prime factors operating in each should serve the credit man as a convenient guide in the analysis of credit risks. Each phase will be considered separately, since each has its own peculiar

characteristics. The interaction of the factors peculiar to each phase and the cumulative effects which they produce bring about the succeeding phase. That is, one phase breeds the next, and the process is continuous, so that analysis may begin anywhere.

A. DEPRESSION: *Business and Economic Factors Predicating a Revival in Business Activity:*

1. Factors at the end of depressions conducive to business revival:

a. Lessening in prime (direct) and supplementary (indirect or overhead) costs of doing business. b. Low interest rates. c. Increasing physical volume of production.	These tend to widen the margin of profit.
d. Liquidation of business debts. e. Elimination or reorganization of financially weak enterprises.	These give sound enterprises freer scope.
f. Reduction of stock of goods held by manufacturers (finished goods), wholesalers and retailers. g. Low ebb of construction activity and new business ventures. h. Depreciation and necessary replacement of fixed assets.	These surmise a larger demand for goods.

i. Increased bank reserves coupled with low interest rates. j. Rising demand among investors for corporate securities because thrifty investors always save.	These facilitate borrowing by business enterprises.

Credit factors in depression.—Strong concerns that have weathered the liquidation process retain their credit worth practically unimpaired. They can make the necessary adjustment by bringing costs in line with selling prices and volume of business. Weak enterprises one by one pass into insolvency until the industrial organization has been purged of inefficient enterprises. But no individual business can exercise control over the forces of depression, and the credit worth of any concern is somewhat affected by many of these: (1) there is the depreciation in value of inventories under slowed-up rates of turnover; (2) there are bad-debt losses as a result of uncollectible receivables; (3) there is the size of the overhead charges that the firm is obliged to carry; (4) the relative trends of the prices of things the firm must buy and of the products it sells are to be accounted for; (5) the volume of business maintained and the margin between costs and selling prices permitted by the price trends must be reckoned with; (6) the size of overstocks existing in the industry are to be considered; (7) there is the rapidity with which a firm can adjust its costs upon a lower basis—one commensurate with its income-yielding capacity, as compared with the rate of readjustment possible to competitive concerns. So that, granted a firm has come through the acute stage of depression unbroken, the questions still remain: Has it readjusted its affairs to the point where it can go forward with the business revival? Has it cut its expenses to a point commensurate with its income capacity? Have the losses it incurred, or its still uncollectible receivables, or its too large overstocks seriously impaired its cash position, thereby forcing it to rely heavily on credit at the close of depression when its cash resources should be large? Many "carried" concerns

share with their creditors the hope that the expected revival will offer opportunity to liquidate. Under such circumstances, one or two things may happen: either the revival does not materialize as early as expected, or stronger competitors, who have liquidated, capture the market with cheaper goods. The result in both cases means that eventually the risk must take further losses in addition to those resulting from overstocks and "frozen" receivables. Some concerns might be strong enough financially to await gradual liquidation rather than the recovery of demand. Others, again, having liquidated early, and being in a strong cash position and influenced by optimism on the part of the entrepreneurs, may stock up too soon at the low prices ruling in depression, and so may be caught with large inventories awaiting a delayed revival. Such a condition seems to have obtained during the latter part of 1921 and the early part of 1922. These are some of the characters assumed by credit risks, during the time the factors in the depression are busy setting the stage for a business revival.

B. BUSINESS REVIVAL: *Business and Economic Factors Predicating Prosperity:*

1. Factors operating in business revival conducive to prosperity:

a. Expansion of physical volume of business beginning often between six months to a year before general prices begin to revive.	Stimulate business activity.
b. Propitious events such as: (1) Profitable harvests. (2) Heavy purchases by governments. (3) Increase in exports. (4) Favorable changes in popular tastes.	

c. Normal increase in population.
   (1) Natural.
   (2) Immigration.

d. Construction work checked by previous high prices resumed at time of lowered costs.

e. Greater regularity of employment.

} Increase actual and potential demand.

f. Prices start to rise, when enterprises, to meet prospective demand, must:
   (1) Train new labor personnel.
   (2) Use old machinery.
   (3) Buy or construct new equipment on plant.

Wholesale prices rise earlier and faster than retail prices: Prices of producers' goods rise usually earlier and always faster than prices of consumers' goods. Prices of raw materials rise earlier and faster than prices of finished products. Prices of mineral products rise more regularly than prices of animal, forestry, and farm products. Interest rates and wages rise later than wholesale prices.

g. Growing confidence and business optimism.

} Incite further buying and forward buying over longer periods:

(1) To avoid prospective price advances.

(2) To take advantage of increased orders.

h. Recourse to bank loans and a greater use of credit.	Injects more funds into circulation.
i. Divergent fluctuations between buying and selling prices.	
(1) Items whose prices rise faster than selling prices.	
(a) Raw materials.	
(b) Goods bought for resale.	
(c) Interest on bank loans.	Increases profits.
(2) Items whose prices lag behind selling prices.	(The increase in (1) is more than offset by the lag in (2).)
(a) Wages.	
(b) Overhead costs, salaries, taxes, interest on long-time funds, rents, depreciation, etc.	
j. Growing efficiency.	
k. Greater physical volume of sales.	
l. Increase in current and prospective profits.	Mean marked expansion in investments and credit operations. Each day's expenditure becomes greater than the income of the day before.
m. Prevalence of business optimism.	

Credit factors in revival.—It should be noted that the revival is always accompanied by a variable or sporadic in-

crease in business activity. Therefore, lack of uniformity in the recuperation of financial standing is the rule among firms. There are several ways in which the credit man may detect evidence of revival in a given business enterprise. First, its financial position may reflect the reviving buoyancy of the market, in the fact that inventories are beginning to move, though their acceleration may be obscured by a corresponding increase in purchases. Second, receivables may become collectible, owing to the fact that the firm's product has become more marketable, and that therefore those who handle it are enabled to pay off their obligations. An example of this is offered in the case of the manufacturer to whom a wholesaler or retailers is indebted. If the product is one which is used jointly with others in the fabrication of still other product, the effect on the receivables of the firm in question may not be so immediate, but it is none the less certain. Third, one may discern rising prices and lagging costs, or still falling prices but lower costs because of greater production efficiency—either one resulting in increased volume of business and better profits. Fourth, payables as well as receivables may undergo reduction, or may become actually payable out of profits. Care should be exercised at this point, to discover whether security issues are being made for the purpose of funding short-term debts previously incurred, for this practice often leads to heavy capitalization and the mortgaging of profits too far in the future. Fifth, application may be made for investment funds by means of stock and bond issues in order to obtain capital for the increasing plant facilities needed in response to the stimulus of prospective profits.

In this phase of the business cycle credit seems to be least troubled. It is the credit man's heyday of liberality in credit granting. And it is also the time to exercise restraint, so as not to court overbuying. Greater attention, if anything, should be paid to individual risks, especially to those whose credit worth has been open to question in the past.

C. PROSPERITY: *Business and Economic Factors Predicating Crisis and Liquidation:*

The cumulative action of the foregoing processes converts revival, as a rule, into normal and general prosperity, by way of an increase in the physical volume of business felt

at first here and there among business enterprises, and passed on to others with which these have business dealings. Every advance in price furnishes incentive for further advances. Every convert to business optimism makes new converts, and increased confidence helps to carry prices higher, while rising prices stimulate growth of trade through increased forward buying for plant extension or other investment undertakings. All of this is made possible by an ever-increasing use of credit.

1. Factors operating in prosperity conducive to crisis and liquidation:

a. Slow at first, but in later phase of prosperity, a rapid increase of supplementary costs due to renewals, *at higher rates,* of old contracts relating to:
   (1) Interest rates on long-term loans.
   (2) Rent.
   (3) Salaries, etc.

b. Rapid increase in prime costs.
   (1) Raw materials rise faster than selling prices.
   (2) Goods bought for resale rise faster also.
   (3) Price of labor rises:
      (a) Rates of wages go up.
      (b) Overtime pay.
      (c) Diminished efficiency.
      (d) Workers' energy declines.

c. Use of inadequate and obsolete plant and equipment.

d. Decreasing efficiency of administration and managerial personnel.

Increase cost of doing business (the increase of (b) is now joined by an increase in (a)).

e. Disequilibrium in supply and demand of bank loans.
   (1) Bank loans are limited by reserves.
   (2) Bank reserves depleted by public's increasing use of cash.
   (3) Enhanced demand for bank loans due to expansion in physical and pecuniary volume of business and to greater working capital requirements, owing to increasing construction activities and operations of new plant extensions.
   (4) Enhanced demand for bank loans to meet the higher cost of doing business.

f. Disequilibrium in supply and demand of long-term loans:
   (1) Decreasing supply of funds available at old rates:
      (a) Greater use of savings in new business venture.
      (b) Savings do not increase as rapidly as demand for new capital.
   (2) Increasing demand for long-time funds to finance construction activities, plant extensions, purchases of equipment, either new or under contract

} Produce tension in the money and investment markets.

g. High interest rates reduce the prospective profit, therefore:
h. High interest rates check expanding production, volume of trade and construction activity.
i. Selling prices cannot be raised indefinitely since some prices are stereotyped by:
   (a) Law and public commissions, for example: railroad and public utility rates.
   (b) Contracts of long-term, for example, for delivery of supplies or for construction, etc.
   (c) Custom or business policy, for example, price of bread, etc., "Consumers' strikes."
j. Uneven growth of production and trade between the various industries.
k. Uneven trend of prices.

} Curtail business activity.

l. Increase of production capacity faster than demand for products.
m. High interest rates force liquidation of goods.
n. Uneven expansion of industries.
o. Curtailment of supply of investment funds reduces demand for all new equipment and materials used in manufacture thereof.

} Cause production actually or seemingly to exceed demand.

It is in this phase of cumulation of prosperity that sharp contrasts develop among the prospects of different enterprises. Though the majority are making more money at this time than in any previous stage of the cycle, some are faced with the possibility of declining profits, owing to the policies of expansion which have been previously referred to as characteristic of cumulative prosperity. Sooner or later, at certain points in the business system, there occurs an actual inability to realize those prospective profit margins, for the obtainment of which investment operations were undertaken, often with borrowed funds. Such threatened or actual declines in profits give rise to a spreading doubt concerning the security of outstanding credits, and cautious creditors begin to tighten up, or press for settlement. This pressure invariably engenders liquidation.

Credit factors in prosperity.—The influence of the earlier phases of prosperity upon the credit position of a firm is as follows: (1) Orders for goods are placed more and more in advance, and the building up of inventory becomes a general practice. (2) These advanced purchases are made, to an increasing extent, on credit. Such policies being prevalent, payables increase, and, naturally, receivables as well. However, the relation between the growth of these items depends a great deal on the terms of sale prevailing in the industry. (3) Profit margins are wide, since selling prices are rising more rapidly than some of the major, that is, wages and overhead, costs. (4) Firms fail often to remain within their income in incurring expenses; therefore, payables to banks and other financial institutions increase and a greater reliance is put upon trade credit. (5) Sales increase more rapidly in pecuniary volume than in physical volume. (6) There is the beginning of a general expansion in plant and equipment, with widespread incurring of obligations therefor.

The later phase of prosperity, known as cumulation of prosperity, witnesses the entrance of new factors that affect credit worth: (1) Credit entanglements have grown in volume and extent, tying together the fortunes of individual concerns through receivables and payables. (2) Inventories have been stocked up to enormous totals, purchased at high and rising prices. (3) Expansion of plant and equipment is usually at its height. (4) Strains are being generated in the credit and

investment market, leading to high interest rates and closer scrutiny of loans. (5) The security market becomes subject to the process of liquidation, which usually produces a congestion of new security issues, and the failure of finding a market for them, or in their marketing at great cost to the individual concern. (6) Costs begin to rise rapidly and overtake selling prices, thus narrowing the margins of profit. (7) Attempts to recuperate profits absorbed by encroaching costs lead to increase in volume of sales and enforced competition. (8) Sporadic breaks in individual commodity prices ensue, because of a more or less united effort on the part of business enterprises to sell off overstocks and the failure of demand to meet former expectations follows.

This is the period when the credit man must exercise caution. Credit granted in the wrong place may lead to heavy losses, or to a large volume of receivables that cannot be collected (if they can be collected at all) until the time when gradual and slow liquidation enables the customer to pay up little by little. It is easy for the credit man to grant liberal credits when business optimism is in the saddle, and orders are plentiful and profits are large, or when prices are high and selling is easy. But, with all these favorable conditions, he should not be misled. No matter what his struggles with the selling department, his policy should be to exercise watchfulness over the credit position of old customers, and carefully to analyze any new risks undertaken. Tendencies to overbuy on the part of the customer should be closely studied. Attention should be paid to the nature of the customer's market. Care should be maintained to apprehend symptoms of liquidation, falling prices, or financial difficulties cropping up here and there. Orders placed unduly far in advance should be especially scrutinized, for the credit man must remember that, the order once accepted, the term of credit extends beyond the date of billing or delivery. A careful selection of the better risks from among the many orders should be practiced. The only sound policy to be followed at this time aims at quick turnover of receivables and takes chances only on the better risks. Having selected these, the credit man has safeguarded probable collections, and can afford to extend the time necessary to even a good customer during a period of liquidation.

Credit men's association viewpoint.—In this connection, it might be profitable to quote the declaration made by the National Association of Credit Men:

It is upon the basis of the findings of the laboratories that our marvelous advances have been made in chemistry, engineering, biology, and psychology. In them those underlying influences and causes are discovered, understanding which, we are able to conserve and progress.

Progress in credits will also come only as we work out the laws that control credit. Therefore we urge upon the members of this Convention and through them the members of the Association at large, that they bring to credit work that grasp of the laws that underlie everchanging credit conditions which will enable them to be in a constant state of preparation for expansion if the signs point that way, or for contraction if the economic, social, or political situation points in that direction.

The Credit Man without vision, the Credit Man who conceives his job as that of merely the leading detail man of his house, the Credit Man who is so pressed that he has no time to help formulate broad business policies has not risen to the true conception of credit work as it is really demanded to-day, for the safety of business and the orderly progress of distribution.

Every business house, if it is to succeed, will do so only as it follows closely well defined policies, and it is more needful than ever that there should be brought to bear, in the formulation of those policies, the trained instinct, that broad grasp of economics and of market conditions, and that knowledge of men that it is the credit man's duty to contribute to business thought.

For the safety of business as a whole against the dangers that accompany it in its ups and downs, for the protection of his house, for the good of the nation, we must now push forward for those new achievements in credit work which will come only as we get a grasp of the fundamental laws of credit.

A case in credit.—How, in actual practice, a firm met the difficulties presented in the closing phase of prosperity is set forth below, an instance which should contain a valuable lesson for the credit man:

The financial head of a medium-sized clothing house recently stated that when the budget for 1920 came up for discussion, orders were of record-breaking dimensions. Some members of the executive committee favored large purchases, increase of plant, and general expansion. The financial executive told them that a period of liquidation was on the way; whether it would occur in 1920 or 1921 could not

definitely be foreseen. He said that the business could choose one of two policies: (1) expand inventories and meet all orders; (2) take only the cream of the business, turn down the rest, watch credits and collections, work off the inventories as speedily as possible, and approach 1921 with the smallest inventory during the last ten years.

The latter course was deemed the safer. As a result, inventory losses were relatively small, cash was more than adequate, profits, while lower than in the preceding two years, were satisfactory, and bank loans were reduced to zero by the end of 1920. Profits were satisfactory in 1921, and will be still larger for 1922 if orders on hand are any criterion. This company insured working capital by playing safe. Some of its competitors are in the hands of creditors' committees.

D. LIQUIDATION: *Business and Economic Factors Predicating a Depression:*

1. Factors operating in liquidation conducive to depression:

a. Efforts to maintain solvency.	
b. Nursing of financial resources rather than pushing sales.	
c. Construction work ceases.	
d. Unemployment increases.	
e. Retail merchants, seeing poor business ahead, reduce stocks and place few new orders, and cease forward buying.	Diminish volume of new orders.
f. This action of retail merchants, as well as reduction in construction activity, falls with cumulative effect on jobbers and manufacturers.	
g. High prime costs crystallized in large inventories and still high supplementary costs.	Decrease profits still further.
h. Declining selling prices.	
i. Diminishing volume of business.	

j. Reduction of debts whenever possible. k. Business expenses are cut: (1) Wage-earners discharged. (2) Purchases halted or postponed. (3) Economy practiced.	Reduces money flowing to consumers and producers and results in low incomes and outgo.
l. Business pessimism extensive.	Cautious buying and investing.
m. Existence of large amounts of uncompleted construction work and unfilled orders. n. Delay in unemployment and restriction upon incomes of consuming classes. o. Increasing use of bank credit continues for most commercial and industrial enterprises after decline in security speculation.	Sustain business activity after slump in stock market and other special commodity market.

Liquidation merges into Depression, and, as we have seen in *A*, Depression engenders the factors which again bring about Revival.

Credit Factors in Crisis and Liquidation.

General considerations.—As we may gather from the outline, the credit worth of a concern in this phase of the cycle develops finally upon its ability to take losses or to get from underneath. In any period of falling prices some one must assume losses. The shorter the period of falling prices, the better are the chances to withhold goods from the markets until subsequent revival has again made it possible to sell at least at cost. However, when a period of liquidation grows severe and exciting and markets become seriously disorganized, losses are more or less enforced. It is then unprofitable to hold goods off the market, especially when they are held on

borrowed funds. If a firm has purchased goods chiefly on credit and the plant expansions have been made with borrowed funds, the ability to control the liquidation of stocks and receivables is rendered difficult. Furthermore, the pressure of liquidating factors often forces inexorably the sale of goods at a loss. In this situation the credit worth of a firm must be regarded principally as a matter of reserves. If the firm is in a strong financial position, meaning that it owns most of the capital employed, or has built up a strong reserve position, such a firm can withstand the shock of liquidation. On the other hand, a firm might have adopted a sound policy in the period of prosperity by not overbuying or overexpanding, at least on credit. Or a far-sighted executive has liquidated his overstocks, collected his receivables—or swapped inventories for receivables—and cut down costs, before the liquidation process set in or became general. Again, a concern may have been in a position to maintain a rapid turnover, because of the nature of its product, by enforcing an efficient selling policy or by intensifying selling effort, sending out salesmen and taking more advertising, having provided for these items by saving expenses in periods of prosperity when sales come without much effort.

Factors credit man should observe.—The credit factors to be looked for, in a period of crisis and liquidation, are: (1) the firm's ability to take losses, its reserve position, and the degree of equity the owners possess in the capital investment; (2) the extent of overstocks and the rate of turnover maintained; (3) the firm's ability to carry needy but financially sound customers by renewing old, or extending new, terms of credit; (4) the degree and rapidity of price decline; (5) the prevailing supply of available bank and investment funds; (6) the amount of the supplementary or overhead costs carried by the concern relative to its sales and income; (7) the probable duration of the liquidation process and the degree of its intensity.

While the acute stage of liquidation is in progress, the credit man needs to watch closely the current tendencies of his risks. The difficulties the creditor will encounter, the degree of bad losses he will sustain, the extent to which orders will be canceled, the length of time his working capital remains tied up in overdue receivables, and the situation in cur-

rent sales, all depend on the soundness of the credit policy adopted in the later stages of the prosperity period. After the acute stage of liquidation has passed and a normal state of depression is reached, the credit man's work becomes the constructive task of revaluating the credit worth of concerns and aiding in the rehabilitation of normal business relationships. This is the credit man's time for courage: courage needed to aid in financial and business readjustment and to prepare business for revival and prosperity. His efforts during depression, when orders are scant and profits small, when prices are low or still falling and selling is difficult, and when business pessimism reigns supreme, require considerable sagacity and careful analysis of credit risks. The credit of many concerns has been severely shaken. Past precedents may become faulty guides to singling out the "strong" firms. These are "parlous" times, full of surprises, as many a long-established concern of good credit reputation hits the rocks of financial difficulties. In addition he cannot, in his task of grading anew the credit worth of customers, apply the rule of "paying when due," and separate accounts on this basis alone. He must safeguard the interest of his firm by insuring adequate protection of the risks incurred, but he must also be lenient in giving the customer an opportunity to readjust his business. This is always a question of time. Even in the matter of current credits, it might be necessary to extend the time of payment, especially if competitors are granting more liberal terms.

Supervision of risks in depressions.—There are many complications entering the task of granting credit in periods of depression. A customer might ask for extension of time or for new credit in order to pay off the creditors who press hardest for payment; or he might deliberately hold off some long-standing creditors in deference to new ones; or he may pay off an old current debt by issuing mortgages or bonds, only to find later that the burden of interest charges and amortization of the long-time debt seriously handicaps him in expansion, and his cash resources may have been dangerously impaired thereby. Moreover, it is highly necessary to be alert constantly to developments in credit risks, for the many circumstances in depressions may affect credit worth adversely.

To the bank credit man, the purpose for which borrowing is done is of the greatest significance in periods of depression. Bank credit might be used in these times to stave off an inevitable reorganization. It might be used to act as a buffer against losses accruing. It might be used to hold high-priced inventory off the markets, against the hope that prices may soon rise again. It might be used to carry customers who are unable to liquidate or who are incurring continuous losses. It might be used to pay off mercantile creditors pressing for payment, which is substituting one form of debt for another. Scrutiny of the risks seeking new credit, or of those asking credit extensions is, therefore, singularly important.

Credit worth as affected by the relation of the industry cycle to the general business cycle.—The influence of the general business cycle upon credit worth is the first concern of the credit man. We have touched heretofore upon additional keys which he should use, in order to throw such sidelights upon his problem as to clarify it in the minutest detail, leaving open as few uncertainties as possible. These keys are to be found in the circumstances characteristic of the particular industry to which a risk belongs. Each industry possesses individual idiosyncrasies in its reaction to the several phases of the business cycle. It is well known that prices do not vary uniformly. Prices of raw materials rise earlier and higher during the prosperity trend of a cycle than prices of finished products. Prices of producers' goods follow the same example as compared with consumers' goods, as also do wholesale as against retail prices. Production in the various industries during periods of revival begins to increase at different times and advances in varying degrees. A similar disparity in the trends of prices and production is discernible in the transition period just before a down-swing in business activity. Raw materials fall earlier and lower than finished products, producers' goods earlier and more than consumers' goods, and prices at wholesale earlier and more than those at retail. Production also reaches maximum as well as minimum in some industries before it does in others. Statistical corroboration supplies important evidence on this score.

Nature of price trends.—Mr. F. R. Macaulay has shown that, from a study of the trend of individual prices during the crisis of 1920 and the following depression, a wide variation

of prices occurred in different industries.[1] Quoting his conclusions:

Another way of presenting these facts, and one which is at least as significant from the viewpoint of business cycles, is shown by giving the months in which each commodity attained its highest price, and its lowest price from January, 1919, to June, 1922. The peak months for 62 different commodities run all the way from July, 1919, to March, 1921, and the lowest points of July, 1920, to June, 1922. Thus the highest months for some commodities overlapped the lowest months for others. Of the whole list of sixty-two commodities, eighteen reached their peaks after one article (raw silk) has reached bottom.

Nature of production tendencies.—Analysis of the variations in physical production point to similar conclusions. Quoting from Mr. Macaulay again:

One difference between these fluctuations of production and the price fluctuations may be pointed out. The dates of the high points of production are less scattered than the dates of peak prices, and they do not overlap upon the dates of lowest production in the way that the price quotations do. It is also interesting to note that fourteen out of the eighteen industries covered had passed their highest points of production before the Bureau of Labor Statistics wholesale-price index attained its peak (May, 1920) and that fourteen of the eighteen had passed their lowest points by July, 1921 (when the wholesale-price index of the Bureau of Labor Statistics touched its lowest point for the time being) and were on the upgrade once more.

Differences occurring in demand.—This irregular manner in which the business cycle affects the various industries may be seen also in demand for commodities as indicated by sales. Approaching this aspect of the problem from the standpoint of territorial differences in business, we find a disparity similar to that found in the trend of prices and production. Some evidence is available concerning the different fluctuations in the retail business in various parts of the country from 1919 to 1922. Lawrence B. Mann has analyzed the sales of department stores as reported by seven Federal Reserve banks with the following results:

According to these figures retail business, among department stores at least, did not pass its peak in any district until six months after whole-

[1] F. R. Macaulay, "Business Cycles and Unemployment," Chapter ii, "Individual Industries and Enterprises in the Business Cycles."

sale prices had culminated, and until after physical production had begun to decline in all of the manufacturing industries for which we have good data. When the decline in retail sales did begin, it started in the southern sections affected by the fall in cotton prices and in the northwest wheat growing area where another group of farmers had been hard hit by a price drop. Not until four months later did the great cities of the northeast see a similar decline in retail buying.

There is a valuable lesson for the credit man in these conclusions, namely, that credit worth of a concern is affected obviously by the conditions prevailing in a particular industry, by the business cycle, by the irregularity in time and amount of fluctuation in the prices and production of individual commodities which feel the variation in demand for individual commodities, and by the irregular retarding and augmenting of demand in different sections of the country due to variation in incomes.

Differences in various cycles at periods of closing prosperity.—Let us keep in mind, then, that, though the inexorable course of the business cycle sways all industries alike, the reactions to the business cycle of individual commodity prices, production, and territorial demand varies in time and degree. No definite principle can be laid down, for no two business cycles produce exactly the same effects on the various industries. As further illustration of this, the first disturbances preceding the panic in 1907 occurred in the copper market, spreading thence to other raw material fields. The business recession in 1910 was forecast by a nearly general decline in all markets. In 1912, the cotton and copper markets foretold the depression in 1913, while, in the crisis of 1920, the first signs of liquidation became evident in 1919 in the silk markets, spreading thence to the sugar and rubber industries. Firms engaged in the industries subject to these initial disturbances are naturally prone to credit impairment at an earlier date than are firms in industries more remote from the point of such unfavorable influences. Demand for their commodities is diminished; production is retarded; unemployment is induced; and prospective profits fail to materialize—bringing about restricted incomes and the concomitant lessening in demand for some kinds of consumers' goods. It is generally true that the first industries to feel an approaching depression are those that are engaged in the production of producers'

goods, such as construction and equipment, and also raw materials. Furthermore, some industries are carried, by the momentum they have gained in rising prosperity, far beyond the saturation point—to the place, that is, where the demand ceases to absorb the products thrown into the markets. Not all disturbances, however, appear in the producers' realm alone. In the field of consumers' demand one must also watch for retardation in consumption. To illustrate again from the 1919-1920 period, the sales of department stores fell off in varying degrees and at various times, owing to the sectional conditions affecting incomes, and, therefore, demand. Whether this demand fell off, because the consumers were affected through their incomes, or because what they produced failed of a market, owing to disturbances in the production system that had already occurred elsewhere, it still remains true that the business system is an organic whole and that disturbances in prices, production, or demand, occurring at any point, may be transmitted throughout the system under the impetus of the forces operating in a business cycle. The effects of a price-break in any commodity market spread by different avenues, and with varying rapidity, through the industrial organization. In order to judge the effects of such communications upon other industries or fields of business, it is necessary to understand thoroughly the organization of the business system and production process, and the interrelations between the factors that make up the system.

It is the task of credit analysis to be on the lookout for these points when business conditions are ripe for the initiation of those disturbances which invariably precipitate crises and depression, and to judge the time within which the effects of such disturbance might reach a particular industry and thereby influence the credit position of a certain concern.

Disparate trends in depressions and revivals.—What has been said above concerning the disparate trends of business factors applies also in large measure to the closing phases of depression and the beginnings of revival. Business reacts to stimulating influences at these times in a sporadic fashion. Once the business system has been purged of the mistakes made in previous periods of boom, and readjustment is well under way, then revival factors begin to strike root. But these stimulating influences do not affect the whole industrial organ-

ization at one time. They begin to work here and there, giving an impetus to business activity first at one point, then at another. Each stimulation generates its like and transmits a train of wholesome effects through various channels and at different degrees of velocity, until, finally, the beneficial effects become so generalized that the whole business system is buoyed up to complete prosperity. Likewise, the financial and business position of individual firms improves sporadically in the various industries, until all firms in all the industries show the improvement. Credit capacity yields naturally to the prosperity forces at work, inventories can be worked off, old obligations can be liquidated, and new ones, often of a greater magnitude, can be undertaken.

Business concerns react differently.—In ascertaining the correlations existing among the business cycle, the industry and the concern, the credit significance of the principles involved must not be confused with the more specific influence of the industry on the financial complexion of the concern which is a part of that industry. That is, business concerns may manifest a similar financial set-up, policy, and performance, even though they belong to different industries. Even rates of turnover may be the same for concerns in different industries. For example, an agricultural equipment concern may present a turnover rate similar to that of a firm manufacturing heavy machinery for factories, but the business cycle may, and, as a rule, does, have an entirely different effect on each of the industries represented by the individual firms. When a stringency sets in in the investment market, it invariably halts construction and expansion activity, while the agricultural industry might still flourish, thus postponing the depressing effects on the agricultural machinery industries. Concerns in the fresh-meat industry evidence a rapid turnover; but, because they cater to the consumers' necessity, they feel the reaction later and in smaller degree when the prosperity tide turns, than do firms in the smelting industry. Many examples might be cited. It is evident from these, however, that it is a matter of urgent necessity for the credit man to avoid being misled by the similarity in reaction between individual firms, and to keep always before him the fact that the credit risk under investigation belongs to a particular industry, and that the way in which a particular industry is affected by the busi-

ness cycles gives to the business behavior of a particular risk its own special significance for the future.

In addition to the industrial and business changes affecting a firm's credit worth, which arise more or less recurringly with the swings of the business cycle, there are certain incidental factors which might exert an influence from time to time. These may be briefly enumerated as:

1. Bad weather.
2. Tariff changes.
3. Technological experiments or inventions.
4. Changes in trade routes.
5. Sudden opening of new fields of natural resources.
6. Interruptions in transportation facilities.
7. Crop failures.
8. Labor strikes.
9. Politics.
10. Sudden changes in popular tastes.

Business indexes serviceable for credit analysis.—Indexes of the trend of business conditions in general serve a dual purpose in forecasting the fortunes of individual credit risk. First, the barometers of general business conditions serve the credit man just as a calendar serves the farmer in the planting of his crops. That is, they identify the phase of the cycle that business is passing through, and point out when and to what degree he must exercise caution. Second, those barometers dealing especially with conditions in particular industries and with special markets, such as the financial, security, foreign, etc., indicate to the credit man the conditions more immediately affecting an enterprise. So the credit man should use business barometers: (1) to determine the phase of the general trend in which business finds itself, whether revival, prosperity, cumulation of prosperity, crisis, liquidation or depression; (2) to discover, by means of his special barometers, the more immediate trend of conditions in the particular industry to which his risk belongs; and (3) to decide, in the light of both situations, how the individual firm under investigation stands, in relation to the trend in general, and to the industry in particular.

Sources of business barometers.—In practical terms, he must adjust in his mind the relationships of the performance of a single concern to the probable trend of conditions in its industry, as conditioned by the probable phase of the business cycle in which business activity finds itself at any given amount. The means at the disposal of the credit man by which this task is to be performed are more numerous than authentic. It will suffice to enumerate several barometers of business that may be of service in this connection. Business reporting services that aim to indicate the trend of general business conditions and are widely recognized are:

1. Standard Daily Trade Service.
2. Harvard Bureau of Economic Research.
3. Brookmire Economic Service.
4. Federal Reserve Bulletin.
5. Federal Reserve Banks' Monthly Business Review, especially that of the Second Federal Reserve District.
6. Babson Business Forecast.
7. Services of various banks.
   a. National City Bank of New York.
   b. Commercial and Continental Banks of Chicago.
   c. Cleveland Trust Co. (Leonard P. Ayres.)
8. Commercial and Financial Chronicle.
9. Bradstreet's and Dun's Reviews.

Among those reporting services which aim at indicating the trend of conditions in individual industries are:

1. Federal Reserve Bulletin.
2. Federal Reserve Banks' Monthly Business Reviews.
3. U. S. Bureau of Agriculture Crop Estimates.
4. Various publications of trade associations.
5. Unfilled orders of U. S. Steel Corporation.
6. Fall River Cotton Reports.
7. Journal of Commerce, New York.
8. U. S. Department of Commerce, Survey of Business.
9. Commercial and Financial Chronicle.

These publications are among the more authentic services that aim at giving scientific and reliable data concerning the individual market conditions and the positions of particular industries.

There are also numerous services which aim to forecast conditions in the financial markets. The more authentic among these are:

1. Moody's Investor's Service.
2. American Institute of Finance.
3. Gibson and McElroy.
4. Wall Street Journal.
5. Standard Daily Trade Service.

The value of these services lies in the data they contain relating to the probable trend of the security market as a whole, as well as to that of individual securities. They provide a basis upon which to estimate investment conditions, which are very important considerations in determining the course of general business conditions. Besides, the security market, especially that of stocks, reflects the discounting process of future industrial conditions from time to time, and, therefore, becomes valuable for estimating the probable future course of business activity as a whole, as well as in the several industries.

References.

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Haney, "Source-Book of Research Data."
Hoover Committee, "Business Cycles and Unemployment," Chapters iii, viii, ix, and Pt. II.
Jordan, "Business Forecasting."
Lincoln, "Applied Business Finance," Chapter i.
Mitchell, "Business Cycles," Chapters x, xi, xii, xiii.
Vanderblue, "Problems in Business Economics," pp. 1-52.

Appendix to Chapter IV.

A perusal of the statement figures given below, for each enterprise, which has been pretty much selected at random, brings to light quite clearly the influence of business vicissitudes upon the external affairs of business concerns. The attention of the credit man is called to the evidences that these figures present of the changes in aspect of the credit worth of the concerns.

RETAIL HARDWARE CONCERN

WHEELING, WEST VIRGINIA

	Total Current Assets	*Total Current Liabilities*	*Net Working Capital*	*Net Sales*	*Times of Net Turnover Working Capital per Year*	*Net Worth*	
1913	$ 48,780	$24,766	$24,014	$ 82,817	3.44	$ 49,261	Depression.
1914	62,738	37,499	25,438	110,360	4.37	57,282	War disturbances.
1915	67,390	34,862	32,527	112,760	3.44	63,442	
1916	81,233	40,477	40,756	131,147	3.22	70,621	Strong revival.
1917	99,286	47,576	51,710	160,012	3.09	80,579	Prosperity with war control of industries.
1918	89,978	31,444	58,534	181,688	3.09	86,263	
1919	106,861	24,242	82,619	202,691	2.44	109,703	Prosperity.
1920	130,028	36,467	93,561	348,314	2.65	119,858	
1921	122,823	30,713	92,119	217,172	2.35	120,329	Depression.
1922	115,768	27,803	87,965	204,181	2.32	116,038	Depression.

MANUFACTURER AND WHOLESALER OF HIDES AND LEATHER

	Total Current Assets	*Total Current Liabilities*	*Net Working Capital*	*Net Sales*	*Merchandise Inventory*	*Net Worth*	*Total Debt*
1913	$11,601,032	$ 2,539,932	$ 9,061,100	$19,674,071	$ 9,523,602	$27,679,114	$ 8,045,932
1914	11,903,813	2,894,281	9,009,532	17,759,076	9,629,441	27,786,320	8,065,281
1915	11,653,722	1,670,970	9,982,752	19,092,483	9,433,403	28,746,295	6,489,970
1916	12,521,158	1,415,297	11,105,861	23,559,749	9,537,653	30,389,560	5,263,297
1917	17,020,534	4,791,044	12,229,490	24,076,824	13,668,202	31,211,188	8,241,044
1918	17,622,184	3,623,459	13,998,735	29,104,428	11,889,481	32,969,386	6,779,459
1919							
June	18,961,695	4,270,951	14,590,744	28,593,698	11,840,993	34,040,929	6,777,951
1920							
June	22,392,244	10,220,591	12,171,653	31,516,049	16,551,403	33,906,690	10,257,071
Dec.	12,475,800	7,159,586	5,326,214	12,650,000	9,289,186	28,685,858	7,185,886
1921	8,259,874	3,323,917	4,935,957	8,580,600	5,886,096	28,134,938	3,346,157
1922	9,751,403	2,749,374	7,002,029	14,286,500	7,438,682	29,170,091	2,749,374

MANUFACTURER OF TIRES AND RUBBER

(000 omitted)

	Total Current Assets	*Total Current Liabilities*	*Net Working Capital*	*Net Sales*	*Net Worth*	*Total Debt*	*Merchandise Inventory*
1913	$ 4,167	$ 1,057	$ 3,110	$ 9,594	$ 5,187	$ 1,057	$ 2,597
1914	5,165	1,962	3,196	10,557	5,619	1,968	2,622
1915	6,894	2,777	4,117	16,203	8,621	2,777	4,531
1916	13,161	2,836	10,324	19,457	16,750	2,836	7,476
1917	26,404	14,708	11,696	29,916	18,910	14,708	17,927
1918	21,929	9,742	12,186	36,682	19,492	9,742	14,909
1919	32,297	12,519	19,777	43,600	31,419	12,519	19,946
1920	33,059	17,543	15,515	42,000	31,184	17,543	20,888
1921	24,702	6,914	17,787	39,269	29,125	16,914	13,060
1922	25,097	7,049	18,048	45,462	31,101	16,549	13,520

MEAT PACKING CONCERN

ITEMS GIVEN IN PER CENT OF TOTAL ASSETS OR LIABILITIES

	1912	*1913*	*1914*	*1915*	*1916*	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*
Cash	3.2	3.2	3.8	4.0	3.5	4.4	6.1	5.2	6.8	5.9	7.7	5.2
Rec.	17.6	19.8	23.8	27.3	26.9	26.6	22.5	29.0	30.0	34.2	12.8	13.3
Inventory	25.8	24.8	24.0	22.8	25.0	32.4	37.2	32.5	26.0	17.3	18.2	21.5
Total Current	46.6	47.8	51.2	54.2	55.4	63.4	65.8	66.7	62.8	57.4	38.7	43.3
Fixed Assets	36.2	35.7	32.6	30.5	27.5	22.5	20.0	18.8	20.8	27.4	43.3	44.9
Miscellaneous	17.2	16.5	16.2	15.3	17.1	14.3	14.2	14.5	16.4	15.2	14.5	11.8
Total Fixed	53.4	52.2	48.8	45.8	44.6	36.6	34.2	33.3	37.2	42.6	61.3	56.7
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Payables	16.2	18.2	24.7	25.9	17.9	32.4	28.6	33.4	32.3	30.4	17.5	16.5
Taxes Reserves	—	—	—	—	—	—	1.7	6.3	—	—	—	—
Funded Debt	19.2	18.1	16.1	14.9	21.9	15.9	26.2	16.6	22.4	24.1	22.9	28.4
Total Debt	35.4	36.7	40.8	40.8	39.8	48.3	56.5	56.3	54.7	54.3	40.6	44.9
Reserves	.4	.3	.3	.2	.4	.2	.6	1.1	1.3	—	—	.3
Capital Stock	12.8	12.1	10.7	9.9	43.7	31.8	25.7	26.2	28.7	31.4	50.1	45.8
Surplus	51.4	50.9	48.2	49.1	16.1	17.9	17.2	16.4	15.3	13.2	9.3	9.0
Net Worth	64.2	63.0	58.9	59.0	59.8	49.7	42.9	42.6	44.0	44.6	59.4	54.8
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sales	182.4	211.3	201.3	211.1	229.4	183.0	212.9	211.5	171.6	124.8	148.4	157.2

The method (p. 113) of expressing the relation that each item in assets and liabilities bears to the total exemplifies again the close conformity of the internal condition of a concern with the business cycle. These percentages reveal the influence of the cycle upon the financial set-up of an enterprise and upon the intricate relationships between the assets and liabilities.

LARGE MAIL ORDER HOUSE

(000 omitted)

	Total Current Assets	*Total Current Liabilities*	*Net Working Capital*	*Net Sales*	*Merchandise Inventory*
1922.....	$26,524	$ 8,195	$18,328	$84,738	$18,718
1921.....	23,226	8,460	14,766	68,523	16,767
1920.....	42,369	16,630	25,739	101,745	30,282
1919.....	56,842	15,794	41,047	99,336	28,136
1918.....	35,068	14,191	20,876	76,166	27,101
1917.....	23,916	8,700	15,215	73,512	17,171
1916	18,477	5,141	13,336	62,044	13,797
1915	12,910	2,340	10,590	49,308	8,010
1914.....	12,783	2,318	10,465	41,042	6,780
1913.....	11,513	2,105	9,408	39,725	7,691

CHAPTER V

NEGLECTED ELEMENTS IN CREDIT

Interrelation of business enterprises.—There are certain elements in the field of credit analysis that are not usually taken into account in the substantiation of a credit worth. These elements are the result of the mutuality of every credit transaction; in other words, the fact that the nature of the credit risks assumed by a creditor firm undoubtedly reacts upon the firm's financial standing and policy, and that, by the same token, the financial standing, financial policy, and, particularly, the credit policy of the creditor firm exert a definite influence upon the debtor concern. Furthermore, as has been repeatedly emphasized, the credit position of any firm is in a state of constant flux or change. The normal aspect of business conditions and of a firm's affairs is dynamic. A business functions in a *milieu* of constant ebb and flow. So that, in so far as business concerns are linked through credit relationships, they cannot avoid influencing each other's financial standing. Just what the sources and processes of these mutual influences are, and how to evaluate each in a credit risk, is the topic to be discussed.

Influence of creditor policies on debtor credit worth.—Those policies of a creditor firm which affect the credit worth of a debtor emanate to a considerable extent from the force of competition. Competition drives firms to do things which are often contrary to their better judgment. Seeking the maximum volume of business possible under given circumstances often leads to the employment of methods which give rise to factors inimical to insuring good credit risks. The seller, actuated by the policy of "getting business at all costs," inadvertently, or otherwise, induces the debtor to impair his credit standing by overbuying and overcapitalizing. In addition to the urge of competition, the creditor firm might, through the prodding of financial weakness, be driven to adopt policies that would have an unwholesome effect upon the credit risk. For instance, the creditor might adopt a high discount rate, by taking advantage of which the debtor might

be induced to overbuy; or the creditor might sell or discount receivables, which might fall into the hands of persons who have no regard for the debtor's interests; or the creditor, under necessity to move goods at all costs, might do so regardless of the permanency of his markets. Again, there are always potent economic factors in the business relationships between creditor and debtor, such as changes in investment conditions, in agricultural conditions, monetary and credit disturbances, etc., which may so affect the policies of the creditor as to injure the credit worth of the debtor. Finally, concerns are often remiss in adjusting their affairs to meet the changing exigencies that arise from time to time, with the result that their outstanding obligations become subject either to extreme looseness or extreme rigidness in the matter of collections.

Mercantile Credit Relations.

In quantity of goods sold.—If we consider mercantile credit relations from the standpoint of the influence exerted on a debtor's credit worth, certain factors come into relief. The first factor—the quantity of goods sold to the debtor concern—is very generally recognized. It is a common practice for firms to overbuy. They desire to increase their profit margins by purchasing at low price levels and selling at higher prices. This is not only a temptation but a general practice in a period of rising prices. But, regardless of this reason in price trend, sellers invariably push their sales. A considerable portion of a firm's expenditures is absorbed by selling expenses. The most frequent arguments advanced to prospective buyers are that prices will go higher, or that plant capacity will very soon be absorbed by orders so that delivery cannot be promised unless purchases are made immediately, etc. In their effort to increase volume of business, creditor firms cause debtors to overstock, thus jeopardizing the credit worth of the debtor and the creditor's own credit risks.

Terms of sale offered.—The second factor entering as an element in the mercantile creditor's influence on its own credit risk arises from the terms of sale offered. As is usually understood, terms of sale include, generally, cash discounts and net terms, which might be datings. The creditor's policy may be of two kinds: (1) the terms may be too liberal; and (2)

the terms may bear no relation to the debtor's rate of turnover, or they may be too severe. The effect of these terms of sale on the debtor's credit worth is immediate and direct. If the terms are too liberal, they may be an inducement to stock up inventory beyond what the market will bear within a reasonable period in the future. This liberality may exist in the net terms or datings offered, as well as in the size of the cash discounts. However, in the matter of datings, the problem of credit terms is not so simple, for, as we know, if the product is of a seasonal nature, orders must often be taken over an extended period, commensurate with the time between seasonal demands, so that production may be equalized. Naturally, great care must be exercised in administering the policy of datings on advance seasonal orders for goods.

Instead of terms of sale being too liberal, the creditor's policy may be the opposite. The danger here arises from a failure to fit the net terms or datings to what may be regarded as the usual rate of turnover of working capital in that industry and that geographical area. If such is the case, then the debtor not only has to meet the difficulties of obtaining funds, but also may experience the burden of not taking advantage of the cash discounts.[1] Furthermore, this policy will invari-

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[1] NATIONAL ASSOCIATION OF CREDIT MEN

Can You Afford *Not* to Earn Your Cash Discount?

Per Cent	*Days Net*	*Per Cent per Annum*
½	10–30 days	– 9
1	10–30 "	–18
1½	10–30 "	–27
2	30– 4 mos.	– 8
2	10–60 days	–14
2	30–60 "	–24
2	10–30 "	–36
3	10– 4 mos.	–10
3	30–60 days	–36
3	10–30 "	–54
4	10– 4 mos.	–13
4	10–60 days	–29
5	10– 4 mos.	–16
5	10–60 days	–36
5	10–30 "	–90
6	10– 4 mos.	–20
6	10–60 days	–43
7	10– 4 mos.	–23
8	10– 4 "	–26

ably force the debtor to seek funds elsewhere, thereby opening lines of credit at other sources. If this occurs, the creditor control over the debtor's affairs assumes a scattered aspect, for funds may be sought in various directions. Moreover, the first credit risks may thereby become weakened, owing to possible overbuying and overborrowing on the part of the debtor. This is a great danger in periods of rapid credit expansion. Whatever these conclusions indicate, it must be remembered that too liberal or too severe and too haphazard credit terms involve the question of whether buyers can be better financed by the seller directly or by the sellers' banks indirectly (which takes place if sellers are forced to borrow on their receivables), or by the buyers' own banks or sources of credit. If terms of sale are not calculated on the basis of the above considerations, they assume still greater importance in their influence on the debtor's credit standing, for, in that case, the credit risks become more complicated and more loosely coördinated with the rates of turnover in the debtor's business.

Influence of price policy.—The third type of influence is the least definite of all. It is exerted through the mercantile creditor's price policy. Price policies emanate from several sources, among which are monopoly, price agreements by trade associations, and competition, besides such manipulations as individual concerns may engage in under special conditions. There are also many firms who are inadequately informed on the market conditions for the products that they purchase and sell, with the result that unexpected changes in prices of commodities purchased lead to corresponding changes in price for goods sold. Likewise, poor insight, as well as foresight, in the markets in which goods are sold, may result in sudden price changes. To the degree which sudden and unexpected price changes and unequal prices are the policy of a concern, to that degree do uncertainties arise in the debtor's business. Monopoly and trade association agreements aim to eliminate to some extent price uncertainties, thus reducing the irregular changes. The bad effects of price fluctuations lie not only in business uncertainties and their influence on profit margins, but also in the advantages gained by one enterprise over another. The latter, under competitive conditions, work hardship to those debtor firms

who have been the victims of high prices for goods which were purchased out of alignment with the prices ruling in the competitive markets at the time of purchase. A creditor-seller's price policy should rest on adequate knowledge of market conditions and their prospective trend, and also on an efficient control of costs. Otherwise, erratic fluctuations in prices injure the debtor-buyer's business by augmenting uncertainties and propagating competitive influences, each of which is equally detrimental to the credit standing of a debtor.

Influence of Bank Policy on Debtor Concerns.

Size of line of credit.—The huge amount of borrowing from banks done by industrial concerns must unavoidably exert considerable influence on mercantile credits in general. Banking policy affects the credit worth of debtor concerns directly and thereby transmits these influences to the mercantile credits that are used in conjunction with bank credit. The connections between banking credit and mercantile credit exist in the spheres of both creditor and debtor. The creditor sells goods on time and in turn borrows from a bank or discounts the buyer's notes or drafts at a bank. Likewise, a debtor may borrow from a bank to make purchases or take advantage of cash discounts. Such practices as these tie the banking and mercantile credit fields closely together, and, through these practices, banks influence general credits as well as individual credit worth. Since our highly competitive banking system contains considerable variation in credit policies among individual banks, it can easily be seen that industrial firms are subject at various times to widely differing influences arising out of this disparity in banking policies. The first of these influences exerted on the credit worth of borrowing concerns results from the size of the lines of credit granted. Its effects are not very different from those previously discussed in connection with the length of net terms or datings offered by sellers to buyers. Liberal grants foster overbuying and overexpansion. Too conservative lines of credit stimulate promiscuous borrowing in the security market or in the open market, or buying on time. The adequate flow of credit to which an industrial concern is reasonably entitled should, as a rule, be determined by the bank jointly with the borrower.

Term of credit.—The second factor—time—is an important element. Long-time credits, or continuous renewals, are invariably detrimental to the borrower's business. It is almost analogous to lending too much, and with similar consequences. Again, as in mercantile credit, the term of credit should be coördinated with the rate of turnover of the borrower's working capital, while allowing also for carrying inventories and receivables that can reasonably be tolerated according to the conditions in the industry. Persistent borrowing indicates insufficient working capital, or the tying up of short-time capital in fixed investments. Such practices as these follow from the banks' inadequate credit policies and often seriously impair credit risks.

Use of funds.—Third, granted the size and term of credit lines are reasonable, nevertheless, if insufficient proof is required of the use to which funds are to be put, or if inadequate collateral is demanded, malpractices creep in that seriously affect credit worth. Careful scrutiny of security and use of funds borrowed should lay bare the purposes of the loan and thus enable the bank to judge its validity under given circumstances.

Rate of interest.—Fourth, the interest rates charged by banks, as a rule, are dependent on the rates of profits earned by industrial concerns. Too low rates, when money conditions are favorable, lead to heavy borrowing for excessive speculations. Not only do such practices create unduly wide margins between the incomes resulting from borrowed funds and the price paid for their use, but they also permit undue risks to be taken by speculation on too distant prospective profits. Too costly rates of interest jeopardize business profits and discourage even the sounder business ventures, besides ignoring the necessity of temporary borrowing even by the most cautiously conducted enterprises in periods when costs are rising.

Banks' position and policy.—In the main, banking policy should avoid contributing to excessive capitalization of business, whether over shorter or longer periods. Sudden calling of loans, even when a more or less sound policy has been enforced, is always subject to precarious risks to the debtors. Insufficient reserves, unwise loans, and high interest rates (though the latter is almost beyond the control of any single

bank) result in serious detriment to the credit worth of borrowers. In so far as banks disregard these principles, they contribute to instability, not only of the credit of individual firms, but also of credits generally. Since banks function along the entire front of our industrial system, their influence on the borrowers' credit standing is a factor to be reckoned with at various times and in different communities. Mercantile credit risks cannot be dissociated from the various banking policies prevailing from time to time in the different business communities.

Influence of creditor's financial position on debtor's credit worth.—Planless production by a creditor enterprise causes jars in the debtor's business, because desultory production operations exert sporadic influences in the market. Relations with such a concern, being unreliable, often shunt the business operations of a debtor firm out of control or away from projected plans. A weak financial position on the part of a creditor concern affords similar difficulties for the debtor. Insufficient working capital, too rapid expansion, or too heavy borrowing, either for working or investment capital purposes, usually lead to sudden demands upon debtors for repayment of loans or other mercantile obligations. Banks behave in a similar manner if low reserves are kept, or credits are allowed to become "frozen."

In many cases, inadequate credit information, as part of lax business administration, is the cause of more trouble than no information at all, since it leaves room for fragmentary knowledge or rumor. Where there is no information, credit depends, in a state of blind faith, upon pure probabilities for payments. This blissful state of mind is at least devoid of unfounded prejudices. But when a concern is unstable or insecure in its own financial standing, and at the same time suffers from inadequate credit information, any suggestion or rumor can suddenly violate that simple trust and transform it into fear of loss, whereupon the poorly informed creditor firm may make untimely and unwarranted demands upon debtors and may lend itself to unbusinesslike practices which injure the credit worth of debtor firms with which it maintains business relations.

In the light of these observations, the close association of business firms, because of the specialization in production

and credit transactions arising therefrom, assumes significance. For financially strong firms are influenced by the weak, and the financially weak, in turn, lean on the goodwill of the strong. No credit investigation is complete unless relations with other credits are considered. If a firm deals with weak enterprises—weak from the standpoint either of policies or of financial standing, its credit worth must be regarded as inferior to that of concerns that maintain business relations with relatively stronger firms. Much of the information pertaining to this question is to be obtained through analysis of the payables of a concern outstanding, with particular attention paid to its line of creditors.

Economic Factors Forcing Unfavorable Influences on Debtor.

Different rates of turnover.—Many of the adverse influences cited above, as being exerted by the creditor upon the debtor, result from the administration of particular businesses. Such influences, as we have seen, emanate from policies adopted by the creditor concerns, either through ignorance or through the dictation of temporary self-interest. Some of these unwholesome practices of creditors, however, occur as a natural result of certain economic factors that help to unbalance an otherwise equable business relation between the two. Among these economic factors are: first, the different rates of turnover or marketing period of both the creditor and the debtor concern. If the creditor's turnover does not coordinate with that of the debtor, it can readily be seen that maturities of obligations require an adjustment with income, which latter, if it does not balance outgo, must be supplemented by some form of borrowing. In case the creditor and debtor belong to the same industry, especially if they buy for resale, their turnover periods might approximate each other, and there would be a happy coördination. If, on the other hand, they belong to different industries, where different turnover rates prevail, even a reasonable degree of adjustment might fail of attainment. Furthermore, if one firm is manufacturing and the other merchandising, there, again, difficulties arise in bringing the two turnover rates into coördination. It is plain that the length of time required for fabricating a

product is often determined by the technological or mechanical processes involved, and that this very definite period would not be subject to adjustment with any other period of turnover. So that the economic factor involved in variable rates of turnover (working capital), as between creditors and debtors, is an important influence in time required or allowed for payment, and that such a disparity of turnover rates makes special demands for capital necessary, to tide over the creditor as well as the debtor.

Other economic factors.—Second, there are certain basic economic factors, such as distances goods must travel, transportation facilities, and the necessity or desirability of carrying inventories, which indirectly add time to the length of turnover. The influence of the creditor over the debtor is thereby increased. If, for example, the creditor pursues or tends to pursue a collection policy in conformity with the terms of sale set by the general competitive conditions (which are dependent on the average distances of shipment as well as on the average transportation facilities, and on a determined inventory policy), the effect on the debtor firm's ability to make payments must vary greatly. For example, the debtor farther away must naturally wait longer for the shipment of goods, and, therefore, must pay before other concerns located in closer proximity to the point of shipment. This principle also operates in connection with the inventory policy. Buyers or debtors often vary in regard to the nature of their market for similar goods. More inventory must be carried by some concerns than others, this being determined by the distance from markets, transportation facilities, and instability of demand. A demand that can be definitely forecasted requires a smaller inventory than one in which greater uncertainties are manifested.

Territorial differences in capital supply.—The third class of economic factors arises from territorial differences in capital supply. In areas where capital is relatively scarce and interest rates are high, the credit worth of business concerns may be said to vary within narrower limits. Facilities for borrowing may, therefore, more or less hamper business operations. Untoward influences in such capital-poor areas may lead creditor concerns to exert pressure for payment of obligations more quickly than if the credit supply were better.

Such conditions exist in some sections of the southwest and far west in this country. The market demand for funds by the interior in times of approaching financial stringencies exemplifies the nature of this problem. Liquidation often begins in these weak capital areas, for from these sources initial pressure for payment of obligations begins. Not only in periods of financial strain, but also at other times, credit disturbances often emanate from the sections of the country where a capital dearth prevails.

How creditors influence debtors in prosperity.—The most significant credit aspects of the business relationships in periods of prosperity are those arising from advance orders and the prevalent increase in indebtedness of firms, resulting from both current and permanent expansion. Increasing capitalization—largely by means of credit—are, in prosperous times, pressed with increasing vigor on the basis of expectant profits. Buying is conducted entirely on probable future, instead of current, demand. Under such optimistic conditions, sellers are swamped with orders covering a distant future. In order to obtain an early shipment, buyers may vie with each other by offering cash. Such cash is often borrowed from banks, or in the open market, if earnings do not yield sufficient funds. The sellers labor between two opposing motives—increasing sales and temporary profits—often only paper profits—and restrict orders to what can be handled with safe credit risks and with no undue expansion. Nearly always the former policy is adopted. Thus creditor-sellers often stimulate credit buying without discriminating between credit risks incurred. Banks, in furnishing funds to "cash" buyers, influence the debtors in a similar manner. The latter become cash buyers only by having substituted one type of creditor for another, hoping thereby to stock up more quickly. In such policies the creditors aid and abet the current and often permanent expansion of business and, usually, are led into the same maelstrom of overcapitalization, by yielding to the lure of overoptimistic forecasts of future profits.

Creditor in controlling position.—The viewpoint taken so far has been from the creditor's angle and the influence of his policies on the debtor's credit standing. A similar line of reasoning may be followed by viewing the problem from the debtor's angle. The reason for placing the emphasis on the

creditor's influence is that such policies as undermine credit worth are mostly under his control. The creditor can adopt the position of a governor of business conduct in prosperous times, when overbuying and overexpansion with its accompanying overborrowing and overcapitalization are rife, and can avoid the impairment of credit risks by restraining such overactivity.

The creditor's influence in times of prosperity might, therefore, be extremely wholesome. Credit scrutiny and rationing by banks would greatly contribute to the equalizing of the trend of production, incomes, and prices. Unbalanced production, as a result of unequal distribution of capital through the use of credit, leads to an unequal flow of incomes, and, further, to disparate trends in the individual prices of commodities. In so far as mercantile credit is used in these times instead of bank credit, similar unwholesome tendencies may be noted. The mercantile creditor can, therefore, greatly enhance the soundness of credit transactions by scrutinizing orders and equalizing sales among customers. He can, also, to a large extent, discriminate between good and bad credit risks in periods of prosperity, and refuse orders from customers of poor credit standing or from such as show a tendency toward an overinventoried condition. If sufficient creditors should adopt such policies, the adoption would result in enhancing the credit worth of concerns in the industry. In this connection, we must always keep in mind that credit worth means, not only "Will the debtor pay?" but "When will he pay?" The answer to these questions can be given, to a large extent, by the creditor himself, if proper precautions are taken in periods of boom.

Creditor preparations to influence debtor in depression.—What influences creditors may exert on debtors, in periods of liquidation and depression, depends chiefly on the credit policies that were pursued in the preceding period of prosperity. If creditors or sellers have discriminated between good and bad credit risks, and eliminated the latter so far as practicable, the bad-debt losses will be correspondingly reduced. Moreover, the time when payment can be made by the debtor has also been improved by these practices. Overbuying will have been restrained, which means also that receivables have remained more liquid in the creditor's assets. But any busi-

ness must be regarded from the standpoint of a going concern in periods of depression. In fact, it is more important that the business volume should be maintained so far as possible, since prices generally decline and thus affect the margins of profits. If the creditor's policy has been to let down on the energy and substance expended in selling, in times of prosperity—especially in the later phases of prosperity—and not to allow expansion on the basis of a temporarily inflated demand for its products, then it can logically be assumed that, if such policies have been general in the industry, the overstocks are not great and can be worked off in the market within a short time and without a great loss. Then the outstanding obligations are likely to be met, and to be met quite promptly. By having nurtured its resources and improved the quality of the credit risks on its books, a creditor concern has put itself in the position to offer its debtor customers the extended time often required by them to turn over their inventory during depressions. By this means the lengthened credit terms are coördinated with the retarded turnover rate of working capital and also with the time required to replenish working capital lost through the depreciation of assets generally.

Summary of influences.—The influences that a creditor concern can exercise on the debtor's credit standing are multiple, and it is not intended to exhaust here the detailed aspects of these influences.[1] (If cognizance is taken of the

[1] Douglas W. Bond, Treasurer, Dill & Collins Company, "Preserving the Customer's Good-Will."

At a recent sales conference the question was asked: "What is the most important function of the Credit Department?"

This is a very large question, but I would have no hesitation in saying that probably the most valuable contribution the Credit Department can make to the successful conduct of any business is to "Preserve the Good-Will of the Customer."

It should always be the earnest endeavor of the Credit Department to foster goodwill. In the first place, we should remember that our customer has his own point of view, and it is not always possible in the first instance to have him accept our point of view. Every account must be handled on its merits, and we should explain to customers just why we are entitled to a certain mode of settlement, and why it is not possible or consistent to allow special privileges in these matters.

The writer is a great believer in a firm credit policy, and a house is entitled to the same respect for that policy as it is in the matter of price or terms. But there is nothing inconsistent in a firm policy in the extension of credits, coupled with liberality.

principles discussed, the credit system as a whole would be benefited as well as individual credit relationships.) By way of summary, then, the sellers or creditors modify their own credit risks by the following practices:

1. Mercantile creditors through:
   a. Quantity of goods sold to debtors.
   b. Terms of sale offered:
      (1) Liberal.
      (2) Too rigid.
   c. Price policy.
2. Bank creditors through:
   a. Size of lines of credit granted.
   b. The length of loans.
   c. Scrutiny of security and use of funds.
   d. Interest rates charged.
   e. Sudden recalling of loans.

There have been occasions, especially during the past year, when we have had to meet our customers halfway in these matters, and, where circumstances warranted, that attitude has done much to cement business friendships with our customers.

The slow account always requires diplomatic handling. Don't "dun" such people unnecessarily, and don't write "form" letters. The writer always likes to "visualize" these customers, and if it is not possible to see them personally, he endeavors to explain to this particular kind of customer just where and how he is deficient. Maybe he, also, has problems, and it is quite possible to advise and suggest "ways and means" of adjusting his financial affairs. Of course, there are some accounts in which the financial responsibility will not permit the extension of credit beyond regular terms, but, even in these cases, it is always possible so to handle the account as to leave no ill-feeling on the part of the customer.

Let us consider the small account, with very little financial responsibility, but where the moral risk is good. It requires faith in human nature to open such an account, but it is very rarely that we are disappointed in this respect. The risk involved in each individual case is not great, and some very good accounts reward such efforts. It would not be good business judgment to refuse to open an account with a man who may only lack large capital. If he is honest and has prospects of success, usually he will buy only when he has an order from his customer. Once in a while we may have to wait for a settlement, but, as a general rule, these accounts are paid very promptly.

Let us remember that there is a credit risk in all sales, and endeavor to use enlightened judgment in passing on every order, for, in the last analysis, the most important contribution the Credit Department can make to the business is to "Preserve the Good-Will of the Customer."

It pays!

3. Creditors' financial position through:
   a. Planless production.
   b. Insufficient working capital.
   c. Too rapid expansion.
   d. Sudden demands on debtors.
   e. Banks through low reserves and unliquidated loans.
   f. Inadequate credit information.

4. Economic factors conditioning creditors' policies through:
   a. Disparity in rates of turnover of working capital.
   b. Distance of shipment.
   c. Transportation facilities.
   d. Inventory policy required.
   e. Territorial differences in capital supply.

5. Conditions prevailing in prosperity through:
   a. Yielding to inflated demand.
   b. Overexpansion of current and fixed operations.
   c. Flooding of markets with goods.
   d. Heavy borrowing of funds.
   e. Scrutiny of credit risks.
   f. Eliminating weak customers.

6. Conditions prevailing in depression through:
   a. Careful preparation for depression in prosperity.
   b. Extending time of credit to good customers.
   c. Facilitating gradual liquidation.

PART II

Chapter VI

FINANCIAL STATEMENTS IN CREDIT ANALYSIS

Significance of financial statements.—Accounting is one phase in the statistical control of a business, and therefore an important source of credit information. We shall see, however, that the manner of its use and the bearing it has on credit risks is closely related to that other phase which involves purchasing, production, and marketing, and such additional data as relate to conditions within an industry and in general business, that gives it whatever value it possesses.

There was a time when it seemed that the viewpoints of the credit man and of the accountant were so opposite in character that they could have little in common. The accountant, by the very demands of his profession, was required to keep his eyes fixed upon the present and the past. By no means could he officially look toward the future. He was a historian, not a prophet. His report could show facts as they were and transactions that had happened, but he dare not forecast what might be in the future.

On the other hand, the credit man was much concerned with the future. The thought which was the sun and center of his mental solar system was, Can he, and will he, pay it when it is due? The profound and all-absorbing issue lay in the future.

Yet the intricacies of modern trade are such that these two have been brought into close association. As the viewpoint of the accountant has broadened, as his activities have enlarged, so accountancy has become more and more important in the operations of credit.

The accountant who did no more than merely check the accuracy of postings and calculations in the books of his client has gone his way. To-day, any accountant worthy of the name recognizes figures in records as being nothing more than symbolic recordings of facts or alleged facts; and his duty lies in the verifying of the facts back of these symbols, rather than merely verifying the mechanical manipulations of the symbols themselves. It may have been of some interest, even in the past, to know that the asset accounts of Mr. A.'s ledger added to a million dollars. It is of tremendously greater interest and importance to know that the assets really owned by Mr. A., and properly valued,

total a million dollars. This is a much bigger job and, if rightly performed, requires knowledge of every element of modern commerce as well as special skill in the tricks of proving facts and values. But with the doing of this bigger job, the accountant has entered into his true place in the business world.

The constantly increasing reliance of the credit man upon the accountant is due to an increasing realization of several things. First, the more accurate his knowledge of present and past facts, the more accurate will be his forecast of the future. The long-range gunner, looking ahead, is interested as to where the shell will fall; but he knows that that will depend upon conditions back of the muzzle of the gun. Even a slight error in the determination of the direction or the elevation will make a tremendous difference as to where the shot will fall. If for these he has depended upon guesswork or unskilled measurement, he will probably miss the mark, no matter how skilled a gunner he may be. If a credit man, however able, bases his conclusions as to the future financial conditions of certain parties upon information prepared by guesswork or by unskilled measurements, he is just as likely to miss his target. Second, credit men are discovering that accountants are beginning to realize that it is not sufficient to determine the latitude and the longitude of a business. There must also be a study of tendencies—of drifts. The ship may be in good water, and its nose may be headed right down the channel, but that will not be sufficient, if there is a side drift carrying it on to the rocks. A business may show a fair balance sheet, and it may show a profit, yet there may be tendencies which will wreck it before another closing date comes around. If these tendencies can be ascertained by his investigation, it is the duty of the accountant so to ascertain them and to display them to the proper parties. How many businesses have become insolvent within a year following the showing of a fair balance sheet condition and perhaps a fair profit? Sometimes these tendencies are so hidden that there is no trace discernible. Sometimes the squall arises without warning. But more frequently these side driftings could have been detected by one skilled in such work. Illustrations of this point could readily be supplied if opportunity permitted.

One of the outstanding features of the times is the insistence upon greater accuracy of classification and greater accuracy of measurement. This is characterizing every phase of scientific investigation and practical application. Analytic and synthetic chemistry have never carried their classifications and measurements to such a degree of accuracy as in the last six years, nor have they ever made such progress in commercial achievement.

In medicine, in engineering, in commercial organization, in cost accounting, in nearly every line of scientific business activity, we find this same progress in accuracy. Business classifications are continually

becoming more exact and the results more scientific. The inevitable result of such progress must be an increased demand for technically trained and experienced men in establishing and measuring the needed classifications for any progressive activity.

No classifications have yet been devised that will aid the credit man to determine absolutely the willingness of debtors to pay their debts when due. But willingness is not the only requisite for such payment. There must also be the ability to pay. A proper display of the financial conditions and progress of a business as prepared by an able accountant furnishes to the credit man a method of determining this element in advance.

Recently the credit man of a very large organization was discussing with me the fact that his company was insisting upon an annual certified audit of every firm seeking credit. I was interested as to the attitude of these customers with regard to this point. He told me that very few misunderstood or raised the slightest objection. They were realizing the trend of the times and that very soon in his opinion this would be a universal demand by credit men. Further, the customers were realizing that a true report of their condition prepared by disinterested third parties could be accepted by creditors without any mental discounting of the condition; whereas, if the customers themselves presented even the same identical figures, there would always be in the mind of the credit man a certain element of doubt as to whether the figures presented a true picture of the business. This does not impugn the honesty of anyone seeking credit. But honesty, even of the most impressive sort, does not necessarily imply the ability properly to display financial facts, any more than honesty would imply the ability properly to calculate the stress and strain of an engineering work.[1]

Financial statements may be classified according to the purpose they serve. First, they may be struck off periodically, or at special times, as the routine function of the accountant. It is not commonly the accountant's duty in such routine to present any interpretation of the various items dealt with, or any expansive valuation of them from the standpoint of price; rather he regards each item as a phenomenon to be handled in the casting up of debits and credits, and the checking of results in accounting procedure from time to time. Second, financial statements may serve the purposes of business administration, by offering statistical data upon which to base administrative control of a business. As in the first instance, ac-

[1] **Charles B. Couchman, C.P.A., of Crockett, Couchman & Crawford, "The Credit Man and the Accountant."**

counting presents the pecuniary records of the financial standing of a firm, at a specific time, in the form of assets and liabilities, and furnishes evidence as to the financial progress of the business in the periods between, through its income, or profit and loss, statements. But the business administrator looks beneath and beyond the figures presented, to the financial relationships manifest in them, weighing the true value of assets and liabilities and estimating the deeper meaning of profit and loss from the standpoint of the responsibilities implied and predicated upon them his future policies and investment undertakings. That is, they interpret accounting data in the light of the future rather than of the past or the present. Third, financial statements may serve directly as the basis of credit and investment analysis. Balance sheets offer exceedingly reliable data of the financial worth of a business. In fact, financial statements present the purest and most direct objective data that it is possible to obtain. It is true that financial statements may be falsified, cleverly disguised, submitted in brief, etc., but, by and large, they give extraordinarily accurate information on the goodness of a credit risk or investment. Analysis of statements for the purpose of gaining credit and investment data is naturally much more exhaustive and far-reaching than that for the purpose of meeting accountancy standards or administrative designs. It penetrates far beneath the ordinary comprehension of what financial statements mean. It gropes for the residual elements of balance sheets and income reports, to discover fundamental facts concerning the financial progress and tendency of a business concern, discovering relationships between the individual items which augur ill or well for the future financial performance of the enterprise.

Nature of balance sheet items.—All items contained in a balance sheet presenting assets and liabilities represent something. This something is by no means in every instance tangible or fixed. On the liability side, items represent intangible obligations. Some of these belong, in a sense, to the business, as, for instance, capital stock, surplus, etc.; while others stand for debts owed to outsiders. These might have been definitely contracted for, or acquired in the process of operations, or levied by external authority—as taxes. On the asset side, these are both tangible and intangible items—

some representing tangible wealth or capital, such as plant, land, equipment, merchandise, and cash; others, the intangible titles to wealth, such as receivables and securities; and still others, only expected returns. But the significance of these items lies, not in the fact that they represent a variety of business assets or liabilities, but that they are expressed in terms of price—in the standard unit of value. This means that each of them has undergone a process of valuation in terms of price. This is the meaning of pecuniary accountancy—the science of debits and credits in terms of price. Unfortunately, it is in this regard that accountancy meets its most difficult test—What correct valuation can be put upon these items in view of the constant changes in price? Some items are beyond this test, as, for instance, obligations incurred, receivables, and cash—the value of these can be more or less definitely ascertained. But securities, goodwill, patents, land, equipment, promotion expenses, etc., are not so easily stated in terms of price. Besides, for some items, there is an additional aspect to this question of valuation, namely, their capitalized earning capacity. This is especially true of goodwill and fixed tangible property. It is this last aspect of the nature of accountancy—the valuation of assets and liabilities—which considered in the light of its third function—to furnish a basis for credit and investment analysis—is of special significance to us.

So we see that, to understand the meaning of financial statements to credit analysis, we must grasp the nature and various functions of pecuniary accountancy in the conduct of a business, realizing where and in what manner it becomes of importance to the credit investigator.

Other data concerning a business.—An adequate analysis of financial statements requires a knowledge of the additional data not brought out by balance sheets and income reports. These data include information on purchasing, production, and marketing; statistics in terms of physical units; proposed plans for the future, which might be utilized as a basis of budgetary control; financial connections; and such like. A carefully prepared form for rendering financial statements might elucidate many of the above points. But no statement can contain all the information desired for credit analysis. The analyst must provide much information himself, especially such as has to do with those within the industry and the

trend of general business conditions. The more valuable business data—considered private, since they concern the internal affairs of the enterprise—must be obtained from the concern itself. Plans, budgets, and prospectuses are invaluable in credit analysis. The discussion of these devices is left for a later chapter.

Form of financial statements for credit application.—The form in which financial statements are prepared has a direct bearing on the amount of information they convey, since a proper differentiation of items adds to their clarity.[2] In prac-

[2] It is also claimed that statements made in proper form will lessen the likelihood of the rendering of false statements. The following account of a conviction under New York false statement law is illustrative of many similar cases that have come before the various courts:

"Harry Bernstein, formerly a member of Bernstein & Shulman, Coat and Suit Manufacturers, of 157 W. 25th St., pleaded guilty to having issued a false financial statement, when arraigned in Special Sessions last month. He was sentenced to ninety days in jail. Justice Salmon, passing sentence, said:

" 'The crime of issuing a false financial statement, and obtaining credit, is, in plain language, stealing. Those who follow such a practice should be warned that appropriate punishment will follow conviction in order that the merchants of the community be protected in extending credit, which is the basis of modern business.' "

John F. Heer, Credit Manager for Passavant & Company, was the complainant. He alleged the firm's net worth was falsified in the financial statement to the extent of about $27,000. Jacob A. Mandelbaum was attorney for the defendant. Chas. A. Houston, of Otterbourg, Steindler, Vant & Company, stated after the plea:

"The financial statement was made as of December 23, 1921, and when the bankruptcy occurred a few months later, the 1921 books were missing and have never been found. Great credit is due to the Assistant District Attorney, Mr. Max Salomon, for his thoroughgoing analysis and presentation of the matter. The defendant has used every means at his disposal to delay the trial, his last move being a motion to have the case transferred to General Sessions for trial by jury, which was denied by Judge Mancuso. It has required a great deal of patience and perseverance on the part of the complainant and the District Attorney to bring about this result. Although the complant was made by Passavant & Company, it was done not only on their behalf, but also on behalf of other creditors who had receiver similar statements, and who were coöperating in the prosecution, namely, A. S. Rosenthal Company, Samuel Eiseman & Company, William Iselin & Company, and the Mechanics & Metals National Bank."

Edwin M. Otterbourg, of the law firm for the complainant, said after the sentence:

"This is one case where a debtor with an 'elastic inventory,' who has been 'caught with the goods,' has not escaped punishment because of a plea of guilty.

tice, these forms vary from the most brief and compact, to the most comprehensive and detailed separation of, items. From the standpoint of credit analysis by means of credit ratios, the items entering into the numerators and the denominators of the proportions from which the ratios are constructed should be clearly differentiated and defined. Their meaning should be clear from the statement of the items. Furthermore, the form of financial statements should not vary from time to time, except as their clarity is increased, since it is necessary to compare credit ratios over a period of years, and this requires that the basis of comparison remain the same. If changes in form are desirable for the purpose of facility of interpretation of the items, then such changes should be indicated in their relation to the previous items. For purposes of credit analysis of statements by means of ratios, the following type form is submitted for study:

ASSETS SIDE OF BALANCE SHEET

A. Cash:

1. Cash on Hand:

Free Cash	.....	
Reserve or Appropriated Cash	.....	.....

2. Cash in Bank:

Free Cash	.....	
Reserve or Appropriated Cash	.....	
Bank's Margin on Deposits	.....	.....

This defendant put up a hard fight before the Magistrate, with the idea of not being held for Special Sessions, and then, when held, by pleading guilty, and being a first offender, having the Court urged to suspend sentence.

"The statement was given as of December 23, 1921. Then new accountants were employed and new books were prepared for the year 1922. The 1921 books disappeared. Investigation disclosed that the same inventory which was worth $26,468, on the opening of the new books, had been closed in the missing 1921 books at only $14,716. This is what I mean by 'elastic inventory.' Unfortunately for the defendant, his old accountants kept duplicate records of their work, which were subpœnaed by the District Attorney.

"All of which proves that if the merchants in New York City use a proper form of financial statement, when extending credit, then coöperate to prosecute anyone who makes a false statement, no matter how carefully the defendant plans to escape the consequences of his acts, the courts and the district attorney's office will bring him to justice."

B. Receivables:

3. Notes Receivables of Customers (not past due) .....
4. Accounts Receivables of Customers (not past due) .....
5. Notes Receivables of Customers (past due)..... .....
6. Accounts Receivables of Customers (past due).. .....

Less:

7. Provisions for Bad Debts..... .....
8. Provisions for Discounts, Freights, Allowances, etc. ....

C. Inventories:

9. Raw Materials on Hand ....
10. Goods in Process ....
11. Uncompleted Contracts ....
Less Payments on Account..... ....
12. Finished Goods on Hand..... ....

D. Other Current Assets:

13. Securities Readily Marketable ....
14. Other Investments of Liquid Nature..... .....

E. Total Current Assets..... .....

F. Other Investments:

15. Notes and Accounts of Officers, Stockholders and Employees ....
16. Securities Representing Holdings in Subsidiaries .....

G. Deferred Charges:

17. Prepaid Expenses, Interest, Insurance, Taxes, etc. .....
18. Other Items ....

H. Fixed Assets:

19. Land Used for Plant..... ....
20. Buildings Used for Plant..... .....
21. Machinery ....
22. Tools and Plant Equipment..... .....
23. Patterns and Drawings..... .....
24. Office Furniture and Fixtures..... .....
25. Other Fixed Assets..... .....

Less: .....
26. Reserves for Depreciation ....

I. Total Fixed Assets..... .....

J. Goodwill ....

K. Treasury Stock ....

Total Assets ....

LIABILITY SIDE OF BALANCE SHEET

A.	**Payables:**		
	1. Notes and Acceptances Made for the Purchase of Merchandise and Materials	.....	
	2. Notes Given to Banks	.....	
	3. Notes Sold through Brokers	.....	
	4. Notes Given for Additions to Plant	.....	
	5. Notes Given to Stockholders, Officers, and Employees	.....	
	Total Unsecured Notes and Acceptances Payable		.....
	6. Accounts for Purchases (not yet due)	.....	
	7. Accounts for Purchases (past due)	.....	
	8. Accounts with Stockholders, Officers, and Employees	.....	
	Total Unsecured Accounts Payables		.....
	9. Payables Secured by Liens on Inventories		.....
	10. Payables Secured by Securities		.....
	Total Payables		.....
B.	**Accruals:**		
	11. Interest	.....	
	12. Taxes	.....	
	13. Wages	.....	
	14. Insurance	.....	
	15. Miscellaneous	.....	
	Total Accruals		.....
C.	Other Current Liabilities		.....
	Total Current Liabilities		.....
D.	**Funded Obligations:**		
	16. Mortgage on Plant (due)	.....	
	17. Mortgage on Real Estate (due)	.....	
	18. Chattel Mortgage on Machinery or Equipment (due)	.....	
	19. Bonded Debt (due)	.....	
	20. Other Fixed Liabilities	.....	
	Total Funded Debt		.....
	Net Worth:		
	21. Preferred Stock	.....	
	22. Common Stock	.....	
	23. Surplus and Undivided Profits	.....	
	Total Worth		.....
	Total Liabilities		.....

NOTE.—Statement of Contingent Liabilities:
1. Discounted or Sold Receivables.
2. Indorsements or Guaranties. .....

Profit and loss account.—The profit and loss account is also subject to a prescribed form which is most serviceable in aiding the understanding of the financial results obtained by a business enterprise. These forms vary naturally with the type of business, since it has a direct bearing on them. Nevertheless, a certain conformity to standard not only facilitates credit analysis of income reports, but is also desirable for administrative purposes. Although the only items in the income account that are utilized in this treatise in analyzing the balance sheet by means of ratios are sales and net earnings, the separation and differentiation of items of income and costs is highly desirable. It is only by a clear-cut statement of costs and income that one can arrive at a proper evaluation of a concern's financial results. For, whatever conclusions may be reached through credit ratios constructed upon the items in the balance sheet, they must be modified by the financial results achieved as gleaned from the Profit and Loss account. In order that the analysis of income reports may be facilitated and their meaning more clearly grasped, the following standard form recommended by the Federal Reserve Board is suggested:

PROFIT AND LOSS

Gross Sales:	
Less Outward Freight, Allowances, and Returns.....	.....
Net Sales	.....
Inventory Beginning of Year.....	.....
Purchases (net)	.....
Less Inventory End of Year.....	.....
Cost of Sales	.....
Gross Profit on Sales.....	.....
Selling Expense (itemized to correspond with ledger accounts kept)	.....
Total Selling Expense.....	.....
General Expense (itemized to correspond with ledger accounts kept	.....
Total General Expense.....	.....

Administrative Expense (itemized to correspond with ledger accounts kept)	.....
Total Administrative Expense	.....
Total Expense	.....
Net Profit on Sales	.....
Other Income:	
Income from Investments	.....
Interest on Notes Receivable, etc.	.....
Gross Income	.....
Deductions from Income:	
Interest on Bonded Debt	.....
Interest on Notes Payable	.....
Total Deductions	.....
Net Income (profit and loss)	.....
Add Special Credits to Profit and Loss	.....
Deduct Special Charges to Profit and Loss	.....
Profit and Loss for Period	.....
Surplus Beginning of Period	.....
Dividends Paid	.....
Surplus Ending of Period	.....

Limitations of statement analysis without statistical method.—Examining the financial statements of a concern with a view to determining its credit worth, without some method of analysis, can, at most, be only desultory and incomplete. The complexity of modern business operations, the specialization in the various functions of business, the necessary differentiation of the elements in business assets and liabilities, as well as business income and outgo and the development of accountancy and business statistics, have rendered the financial statements important and meaningful. The total items in the assets and liabilities usually number eighty or more, and still further differentiation would be desirable. To be confronted with some forty items of assets and forty of liabilities, as material for analysis, is no small task for a credit investigator. Without a method of attack or analysis, the evaluation of this array of items with the object of ascertaining the credit worth would be merely perfunctory—scanning assets and liabilities will not net much information even to a skilled credit man. Again, a single balance sheet, even if thoroughly analyzed, tells only a very brief tale. For purposes of thorough credit investigation it is always necessary

and highly desirable to compare balance sheets over several years or more. It is only by such comparative analysis that the last balance sheet at hand really gathers meaning.

Accounting data combined with business statistics.—Accounting data combined with business statistics, the latter representing conditions within an enterprise which accounting does not embrace, and conditions in the industry at large, as well as in business generally, are being more and more relied on for the purpose of determining policies of financial and business control. The importance of collecting, organizing, and interpreting such data is coming to be recognized, as is the truism that the attributes of efficient enterprise are largely reducible to those proportions maintained between its various investments, operations, and capital supply. A well balanced business within is also well balanced against outside influences. So the keynote for credit analysis of financial statements is the adoption of a method for the purpose of ascertaining the nature of the sources and quantity of capital, the degree of balance among the investments, and the rate of capital turnovers. It may be seen that any impressionistic conclusions from the mere scanning of statements are wholly inadequate for determining the credit worth of a concern.

Reasons for proportional analysis.—Past experiences of credit men go to prove that the absence of statistical method in handling statements has given rise to certain practices that have crept into credit analysis. These practices have recognized that the data contained in financial statements can be reasonably well understood only if the significant items therein are reduced to proportions, that is, to the relation that they bear to each other. So it has come to be clearly understood that the financial set-up of a firm cannot properly be evaluated as a whole, or in the form of raw figures. Besides, it is also realized that the financial policy pursued by a firm can be gleaned only from a comparison of consecutive statements over a period of years, and that the financial results achieved and the current financial position of a firm must be interpreted in the light of past performance, as indicated by carefully analyzed statements. Finally, it is agreed that future financial prospects of a firm can be estimated only on the basis of current tendencies exhibited by the items and relationship between those items in the present. Recognition of these

fundamental facts induced far-seeing credit men to adopt, as an attempt at a statistical method of analysis, a means of ascertaining the complete meaning inherent in financial statements. But this improvement in statement analysis was limited to the employment of only the current ratio.

The current ratio.—The current ratio has been rigorously applied and indiscriminately employed, regardless of the nature of the enterprise or the industry. It has become, so to speak, an objective ideal, by whose standard all enterprises have been strictly judged, and, as a natural reaction, most enterprises positively endeavored by fair means or foul to conform to this standard so far as possible. In its meaning, this standard of current ratio was simple enough: it presented in percentage the proportion of current liabilities to current assets, thereby giving a quantitative measure of the number of dollars of current assets a firm possessed in relation to the number of dollars of current liabilities it carried. The ease of application and the simplicity of this standard were the snare which often led the credit analyst to inadequate conclusions. Moreover, the use of the current ratio in credit analysis had certain advantages:

1. The use of the current ratio by credit men opened up the field of credit statement analysis by the method of determining the proportions between the significant items of assets and liabilities.
2. It undoubtedly gave the lender a quick and easy method of judging the credit of a firm upon at least a relatively sound basis, in statistical data; and, furthermore, afforded a sound basis for observing the progress of a firm over a period of years (assuming that the current ratio was retained consistently as a credit index).
3. It directed the attention of borrowers to the fact that a safe margin of current assets over current liabilities is a sound financial principle upon which to proceed from a credit standpoint.
4. It fostered actual policies on the part of business concerns to maintain a safe margin of "2 to 1" of their current assets over current liabilities.

Limitations of current ratio.—But the rather widespread and inflexible application of the current ratio, as well as its

isolated meaning, bore certain unwholesome fruits, while its incompleteness as a measure of credit worth had serious limitations:

1. The use of the current ratio as the sole determinator of credit capacity resulted in an analysis that was arbitrary and incomplete. The current ratio is limited in its meaning to a mere measure of the proportion of current assets to current liabilities. It does not attempt to define the composition of current assets or current liabilities, nor to describe the liquidity and marketability of assets or the maturities of liabilities. Furthermore, it completely ignores other significant proportions, such as evidence of the amount of working capital in relation to the fixed investment, the proportion of owned to borrowed capital and the sources of the latter, the relation of the total investment to the productivity of assets, and innumerable other relationships between items of assets and liabilities, and also within the assets or liabilities themselves.

2. The use of the current ratio alone has sought to enforce spurious financial standards, by failing to discriminate adequately between the nature of various enterprises and industries. For example, the ratio of 200 per cent, or "2 to 1"—meaning that a firm must have two dollars of current assets to every dollar of current liabilities—generally accepted as safe when universally and strictly applied, does not allow for the varied financial standards in existence under which business enterprises function. Almost every industry, and, what is more, nearly every enterprise, functions under particular conditions requiring different financial set-ups and policies. Therefore, one financial standard for all enterprises is impossible.

3. Owing to the above situation, the sole use of the current ratio has caused business concerns to violate sound principles of finance determined by these specific financial requirements peculiar to their business and has often forced them to adopt furtive policies to make it appear that they have met the arbitrary conventional standard of "2 to 1." The practices referred to embody such distortions of the normal financial set-up of a firm at statement-rendering periods (which periods may occur at the end of the calendar

year or the fiscal year, or quarterly, or semiannually), as the following:

(*a*) The selling or temporary transfer of receivables to obtain cash with which to reduce payables and by that means to raise the ratio to "2 to 1."

(*b*) The conditional sale of merchandise, the condition being that the merchandise is sold only with the agreement that it will be retransferred to the concern after the statement has been rendered.

(*c*) Other temporary sales of assets, made with the understanding that they will be resold to the firm.

(*d*) The retiring of payables and other current liabilities, not out of the current assets or earnings, but by bringing in additional capital. This capital may be obtained from owners, stockholders, or in the security market (the source is immaterial), which implies a swapping of stockholders' or owners' interest, or long-time creditors for short-term creditors.

Such practices, adopted in order to assume a good credit face at the time statements are rendered and audits made, are of the sort usually resorted to when fake ideals animate the conduct of human affairs. The fault, as always, lies in the doctrine of absolutism, and the current ratio has become one of the tenets of this doctrine by the rigorous and inflexible manner in which it has been used to raise credit standards, regardless of fundamental differences among enterprises.

Present tendencies in statement analysis.—The Federal Reserve Act provided for a borrower's statement on all loans exceeding $5000, when such commercial paper is offered for rediscount by a member bank. The factors at work to increase the scope of the national discount market require a closer scrutiny of credit, since borrowers and lenders in that field are farther removed from each other. These credit data are best in the form of financial statements. The birth of the credit department as a part of every business concern further accentuated the credit use of statements. Besides, the ever-widening market for goods entails increasingly distant credit relationships, and, therefore, closer scrutiny of the credit standing of debtors. Finally, the huge losses experienced by business concerns in the late depression have brought credit analysis into greater relief than ever. All these factors, to-

gether with many minor ones, have brought about the tendency to develop a more complete technique for analyzing financial statements. Far-seeing credit men, who possess the means ready to hand, have eagerly sought for a more advanced scheme of credit analysis than the simple "2 to 1" ratio.

Experience of Mr. Wall.—In March of 1919, Alexander Wall, then connected with the First National Bank of Detroit, Mich., published in the Federal Reserve *Bulletin* a treatise on "Credit Ratio Analysis." This seems to have been the first comprehensive study to reach the public regarding the significance of credit ratios. Concerning his experiences in developing them, Mr. Wall says:

> My first experience with the analysis of financial statements dates back to 1905, at which time I became actively associated with a bank credit department.
>
> During the first few years of my experience I became thoroughly imbued with the idea that the Current Ratio was a very important test, and fairly conclusive in the determination of the progress a company was making so far as its credit goodness was concerned. My first real shock in the application of this rule of thumb occurred in 1907 when the crisis of that year brought about almost as many failures in two-to-one statements as it did in ones having considerably weaker proportions.
>
> About this time I formed the conclusion that different types of business would logically require different proportions as between current assets and liabilities, due to the differing economic strains because of business type. It seemed quite evident to me that two-to-one could not at the same time be correct for industries as widely variant as the hardware business and the millinery business. What was logical and correct for one did not appear to me as possibly logical and correct for the other at the same time.
>
> This decision led me to believe that the principal benefit of the acceptance of the Current Ratio as a method of analysis lay not so much in any Current Ratio proportion as in the acknowledgment that proportions rather than amounts were the real test. I at once began to cast about for other salient proportions.
>
> The first additional proportion or ratio that suggested itself to me was the one as between merchandise and receivables and I began to use this in about 1912. It is based on the thought that the bulk amounts of these two types of items are summed up in the Current Ratio on the basis of equality while from an economic standpoint they are quite different, one being on the basis of cost and the other on the basis of profit. Conversion of merchandise into receivables adds to the asset side of the statement the profit on the operation. This addition is not

necessarily accompanied by a proportional addition to the liability side, and thereby the conversion of merchandise into receivables increases the apparent net worth and raises the Current Ratio. This thought was further emphasized by a practice not altogether uncommon ten or fifteen years ago in shipping to subsidiary or affiliated companies or agents a considerable amount of merchandise which was really on consignment but which was carried on the company's books as receivables, thereby affecting the net worth position and the current position.

The next ratio to be developed was one arising from the desire to apportion the capital in use as between the proportions of the business and its creditors. This is the Worth Debt Ratio, which in the years of practice has come to mean as much to me as the Current Ratio and often very much more. I believe that in analyzing a statement to-day I look at this ratio ahead of any other, because the reliance of a company upon its borrowing in order to secure sufficient capital to operate economically is in my opinion very often the first danger signal. This ratio also acts independently of the Current Ratio very often where a considerable portion of the borrowings are of a funded nature, thereby relieving the strain on the Current Ratio but nevertheless creating a disproportion between the sources of capital used.

The step from this ratio, using the net worth, to a ratio aimed at discovering the percentage of the net worth tied up in fixed assets was a very logical one, following shortly upon the adoption of the Net Worth Debt Ratio. This is the Net Worth Fixed Assets Ratio. By its use I have often been able to discover a tendency toward investing in fixed assets or plant at a rate exceeding a proportionate increase in the net worth through earnings or capitalization. It is a test for the conversion of liquid into fixed assets that I have found very helpful in the determination of the direction in which a risk is progressing.

The next two ratios in their historical development were those that existed between sales and receivables and sales and merchandise, the reason for which is so evident as to be unnecessary of explanation. This leaves the ratios of sales to fixed and sales to worth as later additions to the ratio family. They test the productivity of the fixed assets which is a test of the reasonableness of investing in fixed assets and they test at the same time the reasonableness of capital investment by the owners of the business and the activity of this investment.

Having evolved this method of analysis for individual statements, it occurred to me in about 1917 or 1918 that we should study risks by type and attempt to determine what the existing proportions were for all industries so as to have a background against which to measure up the proportions of an individual company. This led to the study of group statements in which industries are studied as a whole in an attempt to establish class proportions. The road to the development of what appears to me to be a more scientific analysis has been a difficult

one, full of misapprehensions, misunderstandings and vague criticism. In general the criticism has been primarily that the studies so far made have been incomplete and inconclusive, all of which I am perfectly willing to admit. I do, however, submit that often in their incomplete form they create backgrounds that are of greater value than the reliance upon a Current Ratio for all classes of business without any recognition of type or economic differences between industries.

In these various studies, Mr. Wall attempted to derive financial standards by ascertaining the average of the various ratios from statements of enterprises in the several industries which he called "National Types." [3]

Growth of ratio analysis.—To what extent credit ratios have been used by credit men is difficult to determine. Obviously, the work involved in constructing credit ratios is fairly great, relative to the usual appropriations made by business concerns for the conduct of the credit department. Nevertheless, the idea of statement analysis by means of credit ratios is rapidly spreading, and will claim an even larger attention in the future. As an indication of this tendency, we need only point to the various studies published under the title "Financial Standards." Curiously enough the derivatives of financial standards also have for their aim the development of average ratios, financial or operating (based on financial statements of a large number of concerns in a given industry), for the purpose of controlling the finances of a single business enterprise, according to the average financial practice among enterprises of a certain type. The widespread efforts being made toward evolving financial standards for purposes of credit analysis and looking toward the formulation of standards for the financial control of an enterprise from an executive standpoint will surely lead to a highly organized and systematized body of data regarding financial and operating ratios, such as has been developed in chemistry in the form of tables of valences and atomic weights, and in physics, in its scale of measurements of force. It must be acknowledged, however, that no such definite standards of measurements can be hoped for in the science of business finance as rule in the so-called exact sciences of chemistry and physics.

[3] The *Monthly Bulletin* of the Robert Morris Associates, Lansdowne, Pa., gives the current results of these studies from time to time.

Credit ratios of practical significance.—We have used the terms "Financial" and "Operating" ratios as well as "Credit" ratios in this treatise, without differentiating between them. There is, in fact, no difference, except in the point of view. By *Financial ratios* one measures the proportions between the sources of capital invested in the business, the relative uses of the capital in the enterprise, and the relations between the financial results achieved and the various investments of capital. *Operating ratios* indicate the relations between the various items in operations. They attempt to measure the proportions between the significant factors within an enterprise which vary in the course of the operations of the enterprise as a going concern. These measurements are primarily concerned with turnovers, costs, and profits. The line cannot be clearly drawn between financial and operating ratios, since all operations of a business enterprise entail financial considerations. However, for the sake of lucidity, the following contrast may be serviceable: financial ratios concern themselves with the sources, uses, and results of capital invested in an enterprise, while operating ratios picture the enterprise as a going concern, dealing with the rates of turnover of assets and capital with the relation of costs and profits to the volume of business done and to the total or various kinds of capital invested. Distinguishing between these two classes of ratios and credit ratios would be unprofitable, since credit ratios embrace both financial and operating ratios, affording thereby a more comprehensive view of a business concern. It is logical and proper that credit ratios should cover any proportions that throw light on the credit standing of an enterprise.

Limits to use of multiple ratios.—It must be pointed out further, that credit ratios, whether specifically recognized as financial or as operating ratios, are subject to almost infinite multiplication. The proportions that can be constructed from the balance sheet and income statement of a firm are numerous. And even though it were numerically possible to enumerate these, it still remains that not all ratios have equal value. Furthermore, too long a list of ratios leads to confusion in the analysis of their meaning for the purpose of synthesizing them in definite conclusions. Besides, the more extensive the construction of ratios, the more difficult it becomes for conclusions to be reached, owing to the fundamental

differences and individual peculiarities of each business enterprise as well as the complexity of the influences upon the trend of business. Therefore, for the sake of practical expediency, not all possible ratios can serve the ends of the credit investigator. It becomes necessary to select the most significant credit ratios and differentiate clearly between them. It will be shown that certain ratios are sufficiently meaningful to suffice in bringing the number of credit ratios necessary to be derived from the financial statement down to an easily manageable number. So, by the evaluation of each one separately, and later by the grouping of related ratios into "families" or "species" (whereby a combination of ratios serves to indicate the significant financial features of a concern), credit ratio analysis may be made a relatively simple method for credit investigation, and, therefore, practicable for a credit department to adopt.

Objectives in use of ratios.—There are certain objectives toward which every credit investigator drives, in seeking to unfold the financial standing of a concern. They may be stated in terms which signify the important aspects of financial business management and are as follows:

1. The amount of owned, relative to the amount of borrowed, capital invested in the business. This entails a further differentiation as to the sources of both owned and borrowed capital, the latter covering short-time or long-time funds.
2. The relative uses to which the total capital invested in the business has been applied. In the main, this factor seeks to determine the proportions of capital distributions among the various fields of business operations, and the degree of balance maintained.
3. The amount of working capital relative to the requirements, as shown by the current liabilities and fixed capital and its management. The management is determined by the working capital turnover, stocking of inventory, receivables, or investments.
4. The productivity of the capital invested. This factor is in general conditioned by the volume and profits of sales, by the supply and use of working capital, and by the size of the fixed or overhead costs.

5. The rate and productiveness of expansion. The rate and returns of current and fixed expansion are elements of singular importance. The rate of expansion must be judged by the trend of sales. Furthermore, the sources of the funds used in expansion, and their influence on working capital, both as to the latter's possible depletion, or the readiness of its supply relative to the possible requirement of increased production capacity, are important.

Selection of credit ratios.—Our task is now to indicate the method of derivation of significant ratios from financial statements. Such ratios as will represent a measurement of the conditions prevailing in the above five divisions from which the financial standing of a firm may be gleaned will be constructed and used. The entire list of possible ratios need not be derived, for it would be fruitless to attempt such refinement of statistical analysis for practical purposes. The ratios presented in the following chapters are, as a rule, sufficient to meet the requirements of a credit investigator in determining the credit standing of a firm. As previously stated, a too detailed analysis of statements by all possible ratios leads to confusion and difficulty in synthesizing results. Moreover, since business is highly dynamic, and every business enterprise actively operating is a going concern, it would be impossible to remain abreast of the changing conditions and the changing status of business if time were wasted on details that are themselves so heterogeneous, because of the variations in each enterprise. Credit investigation must be up to date, and it has obstacles and difficulties enough in this path. Data must point to probable future conditions, while maintaining a close bond with those that are past. We believe, therefore, that carefully selected ratios, that offer evidence as to past conditions prevailing in the above five categories of business operations of a concern, and that indicate therewith the probable future tendency in each, will be reasonably adequate faithfully to identify the requisite credit facts upon which a credit risk might be judged.

Mechanical Technique in Calculating Ratios.

Financial statements complete.—The first prerequisite in the calculation of ratios is a complete set of financial statements, including the balance sheet and profit and loss statement. The significant items in the latter statement to ratio analysis are those of sales and net earnings. In commercial credit, the time element is short; therefore, the income statement, outside the sales, does not offer much credit information as a basis for judging the future capacity of a firm to meet its obligations. Income statements are the statements of financial results achieved as a consequence of past business and financial policies. Balance sheets, on the other hand, evidence the static financial position after a period of operation, and contain the data which will be the basis of future operations. They inform the investigator of the financial set-up, which, under the influence of the financial and business policies adopted by a concern, may lead to certain premeditated financial results in the future, provided outside business factors do not shunt the policies off their premeditated course. Therefore, the financial results contained in the successive income statements are often the very thing that the credit investigator must predict. However, an income statement of actual financial results achieved is a material aid to the analysis of credit ratios. This will be discussed more fully in later chapters.

Interpretation of statement items.—Having before him the financial statements of a concern, the credit man is immediately confronted with the usual incompleteness of most statements. Such differentiation between the items as contained in the model statements presented on pages 137 to 141 is rarely found in practical experience. The credit man must thereupon utilize his knowledge of accounting to interpret the items, which, as a rule, number from a very few to a rather lengthy list, and give each item a meaning that will place it in the right category of items to be used later in calculating the ratios. Since ideal statements, with a complete separation of all distinct items, are, in practice, absent, the credit man must use his own judgment in the classification of items according to their place in the numerators and denominators of the proportions to be calculated. For example,

FORM A

ASSETS	Date		
Cash	1		1
Notes Rec. and Acceptances, Customers	2		2
Accts. Rec. Customers	3		3
Merchandise Inventory	4		4
Listed Securities	5		5
	6		6
	7		7
Current Assets	8		8
Land	9		9
Buildings	10		10
Machinery and Equipment	11		11
	12		12
	13		13
Due from Controlled or Allied Concerns	14		14
Due from Officers, Stockholders, etc.	15		15
Non-Listed Securities	16		16
Stores and Supplies	17		17
Prepaid Expense Items	18		18
	19		19
	20		20
Fixed Assets	21		21
Good Will	22		22
Treasury Stock	23		23
Total			
Liabilities			
Notes Payable, Mdse.	24		24
Notes Payable, Depositary Banks	25		25
Notes Payable, Sold Through Brokers	26		26
Notes Payable, Otherwise Issued	27		27
Bankers Acceptances	28		28
Letter of Credit Liability	29		29
Accounts Payable, Mdse.	30		30
Accounts Payable, Other	31		31
Trade Acceptances, Payable	32		32
Deposits of Money	33		33
Provision for Federal Taxes	34		34
Accruals, Other Taxes, Int., etc.	35		35
Part Funded Debts Presently Maturing	36		36
	37		37
	38		38
Current Liability	39		39
Mortgages	40		40
Bonded Debts	41		41
	42		42
Total Debt	43		43
Reserves	44		44
	45		45
Capital	46		46
Surplus and Undivided Profits	47		47
	48		48
Net Worth 46 + 47 — 23 — (22?)	49		49
Total	50		50
Net Profits	51		51
Dividends	52		52
...ations			
Current Ratio 8 ÷ 39	53		53
Mdse. to Rec. 4 ÷ (2 + 3)	54		54
Worth to Fixed 49 ÷ 21	55		55
Worth to Debt 49 ÷ 43	56		56
Sales to Rec. 61 ÷ (2 + 3)	57		57
Sales to Mdse. 61 ÷ 4	58		58
Sales to Fixed 61 ÷ 21	59		59
Sales to Worth 61 ÷ 49	60		60
Sales	61		61

the items, "Investments," "Securities," are often baffling, for, if these items represent readily marketable securities or value, the case will be different from that when these items represent holdings in subsidiary companies, especially if the latter are an integral part of the firm. Under the former meaning, the items are to be classed with current and quick assets, while, under the latter meaning, they must be classed with the fixed investments. It will be shown later how such "hybrid" items must be handled.

A convenient form in which statements may be submitted for analysis is the one shown on the previous page, used by Alexander Wall. In many respects, it is as complete as the forms previously presented.

Grouping items for ratios.—The first step, after the financial statements are in hand, is to separate the items in such a manner that a reasonable meaning can be imputed to each. Subsequently, the task to be performed is to group the items and to total each group. For this purpose a grouping and totaling form similar to the following would be helpful:

FORM B

Name..... *City*..... MEMBER.....

Business..... *State*.....

Date					
Cash					
Receivables					
Mdse.					
Gov. Bonds					
Misc.					
Current Assets					
Fixed Assets					
Fixed Investments					
Total					

Payables					
Tax Reserve					
Misc.					
Current Debt					
Funded Debts					
Total Debt					
Reserves					
Capital					
Surplus					
Net Worth					
Total					
Sales					

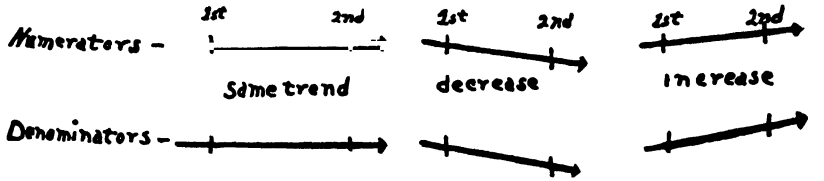
The above form is illustrative only of desirable groupings and totaling of items in assets and liabilities. Even before such an arrangement of items is attempted, it may be advisable to keep on file the periodical statements of each customer or credit subject. The above columnar sheet (Form A), with the items of assets and liabilities arranged according to the original statements submitted, and carried forward from date to date when statements are rendered, offers a convenient and practical form for filing the raw material. Figures, in such a scheme, need only be placed in the column under the proper date and opposite the initially arranged items, which can be done with very little effort and time. From these columnar sheets containing the original items for successive dates, the groupings and totalings can be quickly and easily made on the second form above described. The aim of this grouping and totaling sheet is to make all items readily available for the construction of ratios. Besides, the actual figures can easily be kept at hand when making an interpretation of the trend of the ratios. This holds true also for the columnar sheets that contain the original statement figures. These two sheets are of further significance in connection with the comparisons that must be made between the figures over a period of time. Such arrangements as above described lend ready

aid to credit ratio analysis as well as to the calculation of the ratios.

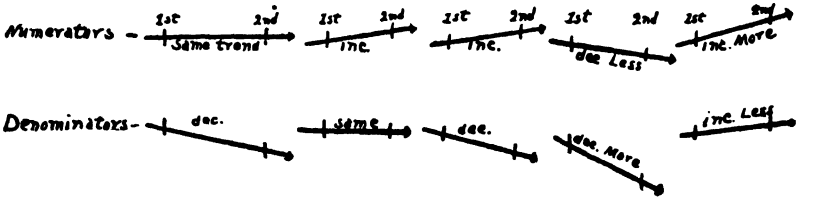
Interpreting trends.—This preliminary mechanical technique has for its aim not only the facilitation of the calculations that credit ratios entail, but also the aiding of interpretation of ratios. Ratios are proportions, or the relation of two quantities to each other, these quantities appearing, one in the position of numerator, and the other, of denominator. The expression of ratios in percentages requires the division of the numerator by the denominator. To illustrate: Let us suppose that current assets equal $2,000 and current liabilities $1,000. In order to determine the ratio or percentage one bears to the other, the proportion is expressed thus, $2000 \div 1000 = 2$, which for the sake of convenience may be multiplied by 100 and made to equal 200 per cent. Interpretation offers the conclusion that the current ratio is 2 to 1, or 200 per cent, meaning that there are twice as many current assets as current liabilities. Now, it can easily be seen that, since these percentages or ratios are proportions or relations between two quantities, one the numerator and the other the denominator, the change in the successive percentages or ratios as calculated from each successive statement, from time to time, may be the result of changes in the size of either the numerator or the denominator, or of both. Therefore, any change in the ratios may be the result of change in any one or all of the items making up the proportions. To illustrate this point the graphic scheme on page 157 will show the possible combinations of changes in the proportions.

The diagram on page 157 illustrates the various combinations of changes in the size of the total of item or items in the numerators and denominators, with their consequent effect on the resulting ratios or percentages. The significance of these changes must be clear, for the interpretation of changes in the ratios must be based on the knowledge of the item or items in the numerators or denominators that effected the change. Therefore, it is always desirable and almost necessary to have at hand the actual figures from which the ratios were calculated, in order to arrive at an adequate and efficient interpretation of credit ratios. These figures, as previously emphasized, can be made readily available in form sheets similar to those suggested above.

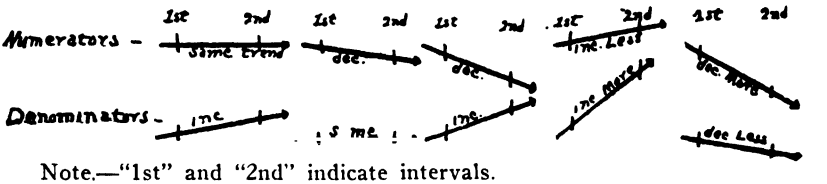
A. No Changes in Ratios if the Total of Numerators and Denominators Change in the Directions as Indicated between Two Periods.



B. Increase in Ratios if the Total of Numerators and Denominators Change in the Directions Indicated.



C. Decrease in Ratios if the Total of Numerators and Denominators Change as Indicated.



Note.—"1st" and "2nd" indicate intervals.

Use of index number.—In addition to the importance of comparing the ratios and their trends over a period of time, it must have become clear that the trend of the individual item or items making up the numerators and denominators of the proportion is also important for an adequate and effective interpretation of the credit meaning of the ratios. In order to keep before the credit analyst in convenient form the trend of the various items, index numbers can easily be constructed from the grouping and totaling sheet for the various items. Whatever year or date or period average is taken as the base (or 100 per cent) for the calculation of the index number—or it might be best to take a chain index with a moving base rather than a static base—the important thing to remember is that that base period must be used for all items for which an index number is constructed. The result will be that the credit man has before him not only the ratios or percentages, but also the trend of the items contained in

the proportions from which the ratios and percentages were calculated. For example, if the trend of the current ratio is the subject for analysis, it might be discovered that the ratio moves either up or down over a definite period. But, as we have seen from the diagrams on page 157, the up or down or unchanged trend might be the result of five different dynamic relations possible between the numerators and denominators in the proportions. An index number calculated from the raw figures of these items, and plotted, will clearly manifest this dynamic relation. Thus, a rather superficial evaluation given to the trend of the ratio might be subjected to serious alterations if the trend of the individual items is taken into account.

Illustration of constructing index numbers.—The index number for the individual items in the current assets and current liabilities, as well as for the totals of each group, was calculated and plotted for purposes of illustration as follows:

Name.....IOWA CORN PRODUCTS CO..... *City*.....DES MOINES.....

Business.....MFG. OF CANNED GOODS, SYRUP, ETC..... *State*.....IOWA.....

Date.....	*1913*	*1914*	*1915*	*1916*	*1917*
Cash	$ 3,876,204	$ 4,380,012	$ 4,315,134	$ 4,047,444	$ 4,236,124
Receivables ...	17,695,404	17,764,868	12,312,562	19,552,406	12,281,235
Mdse.	8,315,429	8,394,468	8,860,364	11,119,841	13,260,988
Current Assets.	$29,887,037	$30,539,348	$36,488,060	$34,719,691	$39,778,347

Date.....	*1918*	*1919*	*1920*	*1921*	*1922*
Cash	$ 6,776,286	$ 7,202,091	$ 8,467,583	$ 7,407,814	$ 8,162,096
Receivables ...	25,629,595	31,961,182	33,873,892	35,752,528	29,656,635
Mdse.	18,706,853	18,594,077	21,189,109	15,534,370	10,195,660
Current Assets.	$52,205,984	$59,034,440	$63,894,831	$58,694,712	$48,014,391

Date.....	*1913*	*1914*	*1915*	*1916*	*1917*
Notes & Accts. Payable	$11,075,784	$11,100,361	$ 8,841,578	$ 7,437,833	$12,039,145
Tax Reserve ..	....	....	....	....	....
Current Debt ..	$11,083,670	$11,188,081	$ 9,641,578	$ 7,437,833	$12,039,145

Date.....	*1918*	*1919*	*1920*	*1921*	*1922*
Notes & Accts. Payable	$17,103,886	$23,102,650	$27,529,423	$29,033,052	$24,663,131
Tax Reserve ..	2,510,657	1,082,480	1,569,448	1,755,988	1,953,838
Current Debt ..	$19,614,543	$24,185,130	$29,098,871	$30,789,040	$26,616,969

NOTE.—For the purpose of illustration only the chief items of current assets and current liabilities have been given. Therefore the separate items do not agree with the totals.

Average of each item for the period from 1913 to 1922 is as follows:

Current Assets	$45,305,000
Cash	5,876,000
Receivables	23,647,000
Merchandise	12,018,000
Current Debt	18,169,000
Notes and Accts. Payable	17,192,000
Tax Reserve	886,000

These figures constitute the base for the index number derived for each item in the current assets and current liabilities, as well as for the two groups of items as a whole.

The index numbers of the various items as relatives calculated on a base representing the averages of the actual figures of these items for the period is presented in the table below:

	Per Cent 1913	*Per Cent* 1914	*Per Cent* 1915	*Per Cent* 1916	*Per Cent* 1917	*Per Cent* 1918	*Per Cent* 1919	*Per Cent* 1920	*Per Cent* 1921	*Per Cent* 1922
Cash	66	73	74	69	73	115	122	144	126	139
Receivables	74	75	52	83	52	108	135	143	151	125
Mdse.	69	69	74	86	110	155	154	176	13	85
Current Assets	66	67	80	77	87	113	130	141	129	106
Notes and Accts. Payable	64	64	51	43	70	100	134	160	169	143
Tax Reserve	..	..	..	..	..	28	12	17	19	20
Current Liabilities	61	62	53	41	66	109	133	160	169	146

Use of percentages.—Perhaps a more simple and equally effective method of measuring the changes that occur in the various items, or groups of items, in the balance sheet is to find the percentages that the various items bear to the totals. That is, the total assets and liabilities are taken to equal 100 per cent, and the proportion consumed by the various items is expressed in percentage of these totals. Such a set of percentages could be more easily calculated for the items in the successive financial statements than the above index numbers, and would perhaps be more serviceable in interpreting the trend of the credit ratios. An illustration of this device is set forth in the following:

WHOLESALE DRY GOODS

100 PER CENT STATEMENT

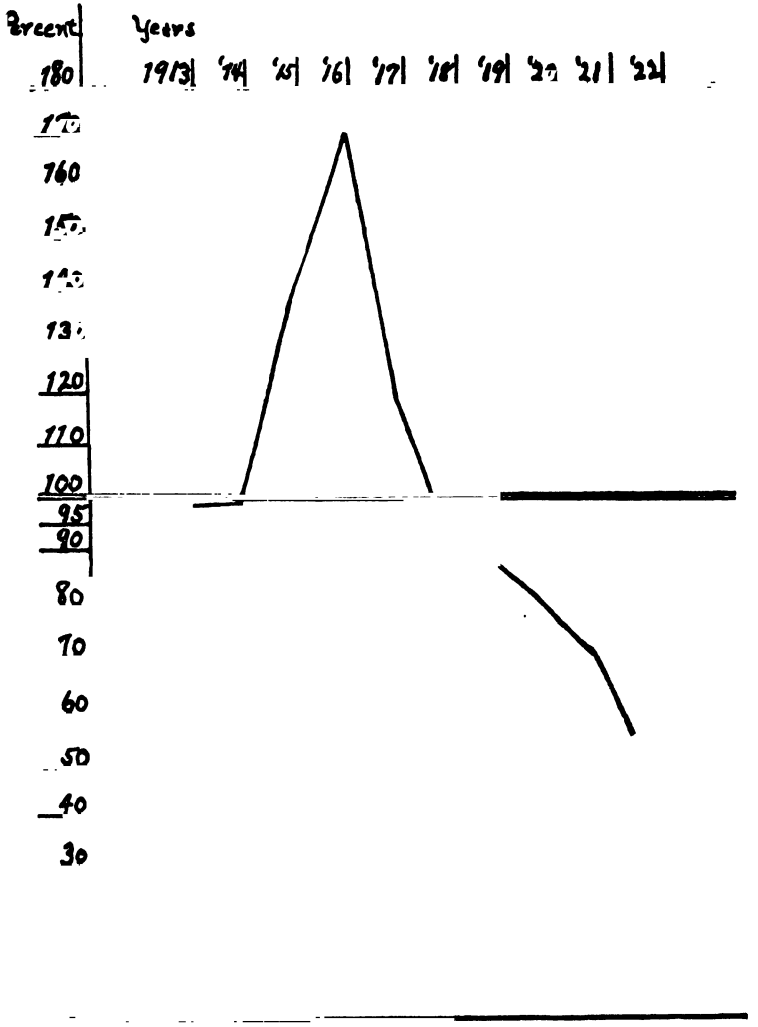
As of December 31st

	1922	*1923*
	—In Percentages—	
Cash	5.10	5.70
Receivables	39.92	38.03
Inventory	38.41	43.90
Listed Securities	.11	.23
Misc.	.23	.81
Total Current Assets	83.77	88.67
Total Fixed Assets	16.23	11.33
Total Assets	100.00	100.00
Payables	33.57	37.42
Taxes	.36	.80
Misc.	2.01	2.03
Total Current Assets	35.94	40.25
Funded Debt	3.09	.78
Total Debt	39.03	41.03
Reserves	.59	.94
Net Worth	60.38	58.03
Total Liabilities	100.00	100.00
Sales	187.21	195.12

Index number of ratios.—Finally, the graphic analysis may be extended further to include the calculation of index numbers for the ratios themselves, and plotting them on a chart. It would be desirable that the fixed base for the index number of the ratios be the same as that used for the index number of the various items and *vice versa*. In case a chain index number is used for both items and ratios, the problem will be taken care of automatically.

As an illustration in the graphic use of the current ratio, the chart on page 161 represents the index number for the period of 1913-1922.

Such a plot of an index number might be constructed for the various credit ratios used in credit analysis, thereby aiding the eye in quickly discerning the trend of individual ratios and in utilizing the combination of several related ratios and their trends in analyzing the financial statements. The raw form in which credit ratios might appear and from which index



Current Ratio on Fixed Base of 273, Average for 1913-1922 Equals One Hundred.

numbers of ratios might be calculated may be tabulated as shown on page 162.

The relative figures for the current ratio, for example, are found by dividing 273 into the actual ratios for the successive years. The graph of the index of the current ratio is given above. After similar index numbers, for the various items

Name.....IOWA CORN PRODUCTS COMPANY..... *Offices*.....

Location.....DES MOINES, IOWA..... *Member*.....

Business.....MFG. OF CANNED GOODS, SYRUPS, ETC.

Date	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	Period Average in Per Cent
	Ratio in Percentages										
Current Ratio	269	272	376	466	330	266	244	219	190	143	273
Mdse. Rec.	46	47	38	56	59	72	58	62	43	34	51
Worth-Fixed	109	110	113	114	116	125	130	134	96	109	115
Worth-Debt	226	231	210	216	216	190	175	176	102	92	203
Sales-Rec.	301	342	269	347	376	477	426	410	243	...	357
Sales-Mdse.	641	725	702	610	631	654	733	655	560	...	652
Sales-Worth	94	106	106	110	131	176	188	180	148	...	126
Sales-Fixed	103	118	119	127	153	221	245	242	142	...	149

in current assets and current liabilities, have been calculated on a similar basis as that used for the current ratio, that is, the average for 1913-1922 equals 100 per cent, they may be graphed. Also, if desired, an index number might be calculated in a similar manner for the current assets as a total as well as for the current liabilities as a total, which may further be used to supplement the interpretation of the trend of the other ratios. Such index numbers might be derived, if advisable, for all the ratios used in credit analysis.

Summary of steps in ratio analysis.—By way of summary, the successive steps in the mechanical technique of calculating, tabulating, and graphing ratios, as well as the items contained in the proportions, may be presented as follows:

1. The collection of financial statements, including balance sheets and income statements.
2. Entering the figures contained in the statements on a columnar sheet under the proper date and opposite the correct item. This columnar sheet is a convenient form for keeping the data of successive statements submitted from time to time.
3. Grouping and totaling of items on a grouping and totaling sheet. Such grouping and totaling of items may vary with the nature of ratios used, but should be on the basis of the items entering into the numerators and the denominators, in the proportions from which the ratios or percentages are calculated.

4. Calculation of credit ratios and entering them on a columnar sheet for the successive years or dates.

5. Calculation of index numbers for the individual items or sums of items equal to the numerators and the denominators in the proportions serving as the basis of the ratios or percentages. These index numbers should rest on the same base period as that used for the index number of ratios. They may be charted.

6. Instead of calculating a relative index number for the various items, a more convenient and efficacious method is finding the percentages that the items bear to their respective totals of assets and liabilities. This eliminates much cumbersome labor and is a great help in discovering the relation that items and groups of items bear to one another in the assets and liabilities.

7. Selection of a base for the construction of an index number for each ratio. This base may be fixed or moving, but must be the same for all index numbers calculated, in order to keep the basis of comparison the same. These index numbers may be plotted, for the sake of convenience in interpretation.

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——— "The Story Told by the Financial and Operating Statements," *Management and Administration,* January, 1924, pp. 25-30.

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CHAPTER VII

CREDIT RATIO ANALYSIS OF THE FIRST FACTOR IN CREDIT; THE SOURCE AND NATURE OF CAPITAL EMPLOYED IN THE BUSINESS

Meaning of the factor.—Credit analysis has for its primary purpose obtaining information concerning the five fundamental factors which underlie the credit worth of a firm. These factors are stated in five propositions on pages 150 and 151. The first of these—the source and nature of capital employed—will be the subject of the following discussion. We place it first in order of treatment, since the source and nature of the capital employed in the business is:

1. Of initial importance in the establishment, and, following that, in the operation, of a business.
2. Evidence of the margin of safety, which is indicative of the degree of equity, maintained by the owners or stockholders.
3. Predicative of future control over the capital invested in the business.

Our conception of this factor as set forth in these pages is, perhaps, more restricted than that of the conventional term "capital," usually classed as one of the four "C's." So interpreted—as one of the four "C's"—the term not infrequently covers the uses of capital as well, whereas the uses of capital are regarded here as an entirely separate category in the measurement of credit worth. It is in this restricted meaning that the term will be employed in studying the following aspects of the sources and nature of capital employed in a business concern:

1. The proportion between the two significant sources of capital—owned and borrowed.
2. The relation between the two sole sources of owned capital—that derived from stockholders' investments directly, and that which is reinvested in the business out of earnings.

3. The proportion maintained between short-time and long-time borrowing.

4. (If desired, the degree in which the net worth covers the short-time indebtedness, since this aspect of borrowing is most significant from the commercial credit standpoint. Supplementary to this point, the relation of the net worth to long-time, or funded, debt may be considered, especially when such debt is in prospect of retirement in the near future.)

The question as to the total amount of capital invested in a business cannot effectively be considered in connection with this credit factor. The answer would involve too many indeterminate elements which vary with every enterprise, and is, therefore, for practical purposes, too complex for the method of credit ratio analysis. For it can easily be understood that the amount of total capital in a business compatible with efficiency is a result of two factors—profitableness and safety —both of which usually vary with the nature of the business and the ability displayed in the uses of invested capital. Moreover, whether a given amount of total capital invested in a business be the amount compatible with efficiency is a thing which must be determined indirectly, pursuant to the course of ratio analysis, under the five main credit factors posited as the basis of the analytical procedure in the previous chapter (pp. 150 and 151). It is an accepted principle that the efficient amount of total capital must be judged on the basis of the particular conditions surrounding the operations of every business concern.

Credit Ratios as Measures of Sources and Nature of the Capital Employed.

Ratio of net worth to total debt.—A ratio is a measure of the relation which one quantity or magnitude has to another. It is expressed by the quotient of the division of the first by the second. It is often advisable, for the sake of convenience in credit analysis, to multiply the quotient by 100. The final result will be in the form of a percentage on the basis of 100. Thus, our first credit ratio to be developed for analysis would be expressed as follows:

$$\frac{\text{Net Worth}}{\text{Total Debt}} \times 100 = \text{Ratio or Percentage.}$$

The net worth of a concern must be carefully calculated from the statements at hand and care must be taken also that the basis for calculation is comparable from year to year, or from one statement period to another. This means that the items in the balance sheet must be taken into consideration in determining the net worth of a concern. For noncorporate concerns, the difference between the resources and the liabilities might be a reasonable measure of the amount of owned capital in the business. However, sufficient inquiry should be made into these—especially the fixed assets—to determine the reasons for any changes in net worth, to discover, that is, whether they are due to profit or loss, or to changes in the prices at which property is valuated, possibly by the practice of marking up the price of the various items classed as resources. The bad-debt factor, too, and any unfruitful promotion expenses, should be closely scrutinized. Determining the net worth of a corporate concern, on the other hand, is a somewhat more complex problem. As a rule, the net worth of a corporation is regarded as equal to the sum of common stock, preferred stock, surplus, and undivided profits. This is invariably the gross measure, however, and should have deducted from it the stock held in the treasury, the book value of goodwill, whatever deficits have been incurred, and such assets as might be deemed fictitious in case of liquidation. The result would more nearly approximate the true amount of owned capital in the business.

Methods of stock valuation.—Most companies assign to their stock an arbitrary value in the balance sheet. This is a frequent practice not only for stock of no par value, but also for stock which has a par value. It is common knowledge that the par value of stock is strikingly arbitrary as compared with its real value, determined by the capitalization at the current rate of interest of the actual earning capacity. The par value of stock, it is true, may accurately reflect the original amount of stockholders' investment, but such investment may have been dissipated or lost in many ways, wherefore, the item cannot truly measure the owned capital actually present in the business. The same thing holds true for different reasons in the case of conservatively managed firms whose par value stock underestimates the real value as measured by earning power and money earned and left in the business. This money

reinvested is not necessarily covered by the Surplus account, but rather used up in writing down fixed or other assets in the balance sheet. Such a situation is an indication not only that a sound and liberal maintenance policy has been followed, but also that assets, like plant and equipment, have actually been written down to a mere nominal figure, even though their usefulness remains completely intact.

Analysis of surplus.—The corporate surplus, the other significant item in net worth, has also a variable meaning.[1] A true surplus is built up out of the earnings left in the business. In practice, however, it is often credited with premiums from new security issues, or with funds obtained at the time of original issues of stocks, or with profits from sale of fixed assets, or may appear as the result of raising the price at which fixed property is inventoried, or of adding the goodwill accruing from new patents or change in organization, or of reducing stock capital and proportionately increasing the Surplus account. Besides, there is often no distinction made between the so-called "free" surplus and "appropriated" surplus, the difference being that the former is untrammeled for use in business, while the latter is ear-marked for expenditure to meet special liabilities, such as sinking fund requirements, reserves for maintenance, etc.

Net worth to be discovered.—But it must be remembered that a credit investigator is not at liberty to prescribe the form of statement best suited to his purpose. He must often interpret what financial statements are submitted to him and exercise a judgment and discretion not reducible to formula. Therefore, to determine the net worth of a corporate concern, his most reliable method is to add the items of capital stock, common and preferred, to the surplus and undivided profits, and to deduct from this sum the book value of goodwill and any existing deficits. A more intensive inquiry into the net worth of a concern would require extensive investigations of the actual value of the property and assets possessed. Such a measure would require personal supervision of inventorying or an expensive audit. Both are usually impracticable for a credit man to adopt.

[1] J. H. Bliss, "How to Analyze the Surplus Account of a Business and How to Determine the Elements of Free Surplus," *Management and Administration*, May, 1924, pp. 529-532.

Testing the correctness of net worth.—This does not preclude, however, the possible checking up of conclusions drawn, or figures derived, in this manner. A verification or test as to the correctness of the net worth can be made from the income reports. It would be fair, in such a test, to take the average net income earned by a concern over a period of years (a period that would embrace about two business cycles, that is, two depression, and two prosperity, periods), and to capitalize this average of net earnings—net after all deductions are made—upon the average rate of interest on investments over a similar period. This average rate of interest might be taken as the average of the rates on both short-time and long-time investments, since, presumably, the owned capital in the business was used both for working and for fixed capital purposes. If such a capitalization should be tolerably close to the figures of net worth arrived at by adding the items of capital stock to the surplus and undivided profits and deducting the book value of goodwill and deficits, then the net worth so derived might be taken as sufficiently representative for the purpose of constructing the credit ratios. If a great disparity should be found between these two methods, additional adjustments must be made in accordance with the facts. No rule can be laid down to be followed in every case; but in seeking to discover the possible sources of this discrepancy, the valuation of other items, especially those of "Patents" and "Copyrights," must not be overlooked, and those listed as "Fixed Assets," or "Other Assets," or "Intangible Assets," should be closely watched, and any evidence of fictitious values detected therein should be deducted from the net worth figures.

Analyzing total debt.—In analyzing the items that make up Total Debt, or the denominator, of our Net Worth to Total Debt ratio, it must not be assumed that "total liabilities" are synonymous with "total debt." Such a misunderstanding might easily arise with those whose acquaintance with financial statements is limited to noncorporate business enterprises. In the latter type of concern, total liabilities are equivalent to total debts, but not so with corporations. In corporation accounting, total liabilities include the owned capital contributed by the owners or stockholders, as well as borrowed capital in the form of borrowings, or goods pur-

chased on time, or accruals, such as wages, interest, taxes, insurance premiums, etc. Therefore, "total liabilities" are not synonymous with "total debt" as here used. Total debt is the sum of current and funded debt items, which includes notes, acceptances, accounts payable, and accrued liabilities under "current debt," and mortgages and bonds under "fixed or funded debt." If reserves appear as liabilities, it is a well recognized procedure in credit analysis to deduct them from the assets. For example, reserves against depreciation should be deducted from the fixed assets and reserves against contingencies, etc., from current assets. For purposes of ratio analysis, the results might be tolerably equal, whether or not such deductions are made from the assets and included as liabilities wherever debts form an element in the ratios to be calculated. Whatever disparity might arise from a use of the latter method would undoubtedly be eliminated under the former plan.

Construction and meaning of net worth: total debt ratio.—The items having been evaluated and arrayed for their inclusion in the Net Worth to Total Debt ratio, and the quotient obtained by dividing the first by the last having been multiplied by 100, expressed as a percentage, indicates the proportion of owned capital to borrowed capital invested in the business. If, for example, the ratio should be 50 per cent, the conclusion to be drawn is that the owners or stockholders have invested one dollar to every two dollars borrowed from investors or creditors; thus the equity of the owned capital in the business is only one-third. While, on the other hand, should the ratio equal 100 per cent, then the owners' equity would be greater than if the ratio were 50 per cent, or one-half, and the creditors' only one-half—which might also be interpreted to mean that the owners have invested one dollar in the business for every dollar borrowed, or on a 50-50 basis.

Reasons for variations in ratio.—Now, variations in the Net Worth to Total Debt ratio may be caused by the following—any one of the four separately, or all of them taken together:

1. Increase or decrease in stock outstanding.
2. Increase or decrease in surplus, or profits left in the business, or deficits contracted.

3. Changes in the methods of pricing items deductible from net worth, such as goodwill and other fictitious items.
4. Increase or decrease in current or funded debt.

In order to detect the special items which have been instrumental in inducing changes in the ratio, constant reference to the trend of the individual items should be made, thereby extending the analysis of credit worth beyond the immediate ratio calculated.

Ratio of surplus: net worth.—Turning to the second of the four measures of the source and nature of the capital employed in a business, the Surplus to Net Worth ratio is a logical sequence of the Net Worth to Total Debt ratio, since it reflects the source of owned funds invested in the business. In calculating the Surplus to Net Worth ratio, the method of selecting the items to be included under Net Worth is similar to that described in the previous pages, and nothing further need be said. In regard to the items that make up the numerator or Surplus in this ratio, some difficulties are presented, as we have seen, in finding the Net Worth. If financial statements lump all surplus and undivided profits items under one head as "Surplus," then nothing further can be done, except to take the item as presented. When, however, the Surplus account is divided into "free" and "appropriated" surplus, or some similar separation, discretion must be exercised. The question becomes, What part of the appropriated surplus should be taken to mean actual surplus? Generally speaking, we may assume that all surplus represents earnings left in the business and, therefore, is a source of owned funds, regardless of the uses for which it is intended or earmarked. Or, it might be assumed that, if such earnings had not been left in the business and earmarked for a specific purpose, they would not have gone into the "free" surplus account anyway, or that, if no such earnings had been left in the business, it might have become necessary to provide additional capital from other sources—either from new stock issues or by borrowing. With these ideas in mind, it might be rightly concluded that all surplus should be used in the above ratio. If the surplus has been appropriated for reserve purposes a similar procedure, previously outlined, should be followed.

Construction and meaning of ratio.—The form for calculating this ratio may be expressed thus:

$$\frac{\text{Surplus}}{\text{Net Worth}} \times 100 = \text{Percentage or Ratio.}$$

If this ratio equals 25 per cent, it means that one-fourth of the owned capital in the business is derived from earnings left in the business, or that the firm has twenty-five cents of capital derived from earnings to every one dollar of total owned capital or net worth. The causes for changes in this ratio from time to time are similar to those indicated under the Net Worth to Total Debt ratio, except that those affecting debts are excluded. It must be recalled at this point, however, that the sources from which surplus may be derived, as outlined on page 167, have a close bearing upon the changes in this ratio. Careful investigation, if at all possible, should be made, as to the existence of such practices with reference to the Surplus account. Stock dividends might also reduce the account, thereby reducing surplus, but leaving net worth the same.

Ratio of current debt to total debt.—The third ratio under discussion is Current Debt to Total Debt. This ratio states the proportions maintained between short-term and long-time borrowing, and, therefore, indicates the sources of borrowed capital.[2] The ratio is espressed thus:

$$\frac{\text{Current Debt}}{\text{Total Debt}} \times 100 = \text{Percentage or Ratio.}$$

Calculating this ratio is relatively simple as compared with the previous ones, because the items to be included in the numerator and the denominator are easily determined. Under current debt notes, acceptances and accounts payable are summarized in addition to the accrued liabilities, such as wages, interest, taxes, insurance, etc. From these accruals the corresponding prepaid items in the assets might logically be deducted. Reserves against current or contingent liabilities may

[2] A closer scrutiny of the payables should be made in order to determine whether borrowing is done from banks, from the open market, or by goods purchased on time. Bonds and mortgages should also be examined to discover any clues as to provisions affecting the responsibility for payment.

be excluded and can be better handled by deducting them from the current assets, since reserves do not often carry with them a definite setting aside of cash or other assets and, therefore, are merely "paper" reserves. On the other hand, where a reserve is based on the allocation of a specific fund or property item in the assets, for example, sinking fund requirements, such items may be included under current liabilities. In the ratio here analyzed, reserves, except tax reserves, can be excluded, therefore, as an item under current debt, since they should more properly be deducted from the assets against which they have been created.

The denominator embraces not only the current debt but also the fixed or funded debt; therefore, mortgages, bonds, and other long-time liabilities should be added. The items are the same as those under the Net Worth to Total Worth ratio. Here, again, a fixed maintenance of reserves against depreciation of plant and equipment should be disregarded and deducted from the fixed assets.

Meaning of ratio.—If, for example, the ratio of Current Debt to Total Debt is 25 per cent, the inference to be drawn is that the firm obtains one-fourth of all its borrowed capital on short time, which also means that, out of every dollar borrowed, twenty-five cents is payable within a short period, while seventy-five cents is payable at more extended dates. The causes underlying any change in this ratio may be attributed to the following:

1. Increase or decrease in current debt, or in any of the special items under that head.
2. Increase or decrease in fixed or funded debt, or in any of its items.
3. The funding of current debt.
4. The recalling of long-time indebtedness and the substitution of short-term obligation therefor.

Again, simultaneous changes might occur in all of these, so that all of them must be carefully examined.

Supplementary ratio of current debt to net worth.—The final ratio that may be analyzed is Current Debt to Net Worth. This ratio may be supplemented by the proportion maintained between Net Worth and Funded Debt, though the latter is more useful to investment than to commercial credit

analysis. The Current Debt to Net Worth ratio is expressed thus:

$$\frac{\text{Current Debt}}{\text{Net Worth}} \times 100 = \text{Percentage or Ratio.}$$

The items figuring in the numerator and the denominator of this proportion have been discussed above in sufficient detail to warrant passing over them at this point. The causes for the variations that might occur in the trend of this ratio are:

1. Increase or decrease in Net Worth as previously indicated.
2. Increase or decrease in Current Debt as above explained.
3. The payment of current debt out of previous earnings, as, for example, out of accumulated surplus or undivided profits.
4. Reduction of capital stock through losses incurred which directly reduced liabilities.

If the ratio were 100 per cent, it would indicate that the net worth of the concern is sufficient to cover the current indebtedness, while, to the extent that the ratio fell below 100 per cent, net worth would more than cover the current obligations, meaning that the firm would have more than a dollar of short-term debts for every dollar of owned capital in the business.

The Net Worth to Funded Debt ratio would indicate a similar relation, in that it would show to what extent owned capital furnished long-time capital as compared with bonds and mortgages. By means of this ratio, evidence could be obtained as to whether it is the policy of the firm to provide permanent capital for the business by means of bonds and mortgages, or by means of stock issues and reinvested earnings. The calculation of this ratio requires no further discussion beyond what has been said in discussing previous ones.

The above credit ratios as measures of the capital invested in a business, with reference to the sources from which it has been obtained and its nature, have been analyzed; all from the standpoint of (*a*) the items that enter into the quantities of the proportions—as numerators and denominators; (*b*) the meaning to be imputed to each ratio; (*c*) possible causes for

changes in the trend of the ratios; and (*d*) the meaning to be imputed to the change in trend. We shall now discuss the method of interpreting credit ratios in combination, instead of singly, and of analyzing the meaning of the trend of all four ratios in combination.

Combination credit ratio analysis.—The interpretation of single ratios, once constructed, can readily be made, and the meaning of their individual trends is also quickly discernible, especially if constant reference is made to the changes appearing in the various items included in the proportions. But such simple evaluations are not productive of practical results. Credit ratio analysis requires that the ratios be analyzed in combination. Besides, all ratios, as must be clear, have both a static and a dynamic meaning. The following steps must be carried out in any credit ratio analysis that is at all complete.

1. The interpretation of each ratio singly as a static relation between two quantities.
2. The interpretation of the trend of each ratio singly as a dynamic relation between two quantities.
3. The evaluation of all ratios in combination as static relations under each of the main credit factors outlined on pages 150 and 151.
4. The interpretation of the trend of all ratios in combination, under each main credit factor as dynamic relations.
5. Finally, before the credit worth of a concern can be ultimately determined, the results of the analysis of ratios in their bearing on each credit factor must be combined with the results obtained under all credit factors, so as to synthesize the final conclusions reached into one estimate of the credit worth of a firm. This process, too, has both a static and a dynamic aspect, since the static meaning must be modified by the trend of conditions as a whole, which is discernible in the five credit factors involved, which requires, of course, a dynamic interpretation.

The practical application of all these steps must be deferred to the succeeding chapters, when a case analysis will be entered upon. Nevertheless, the first four steps will be practically clear by the end of the present chapter, and these four steps will be used as the basis for the analysis of some practical cases, from the standpoint of the first factor in credit. Their

application to the other main factors will be taken up in consecutive order in the next four chapters.

Combination analysis of ratios above discussed.—So far, the ratios of Net Worth to Total Debt, Surplus to Net Worth, Current Debt to Total Debt, Net Worth to Current Debt, and Net Worth to Funded Debt have been interpreted singly from the standpoint of their static meaning and of the meaning of their individual trends. It still remains for us to consider their static meaning in combination, as well as the dynamic meaning of their individual trends in combination. The observation that "influences may cancel each other" is clearly evident here and must be reckoned with in interpreting the ratios as a whole. Each of the five credit ratios above stated may have either a favorable or an unfavorable aspect at any given time, and their individual trends may have a similar quality; but in order to evaluate the combined position and tendency of these ratios, some scheme of synthesizing the influence of the several forces into a final resultant must be determined on.

It might be well to consider the meaning of the trends of the ratios in combination, together with the meaning of the position of the ratios with reference to each other at any given time. For instance, in the first, the ratio of Net Worth to Total Debt, a weakening credit position is evidenced as this ratio decreases in value and a strengthening of credit worth as it increases. Assuming that this ratio is decreasing simultaneously with a decrease in the Surplus to Net Worth ratio, the result must be interpreted as more serious than would be the case if the latter ratio had increased simultaneously—which might indicate increasing reinvested earnings, even though the equity of the owners in the business were declining. This would indicate that the stockholders were leaving their earnings in the business even though more borrowing was done. Suppose, now, that the Current Debt to Total Debt ratio increases as the above two ratios are decreasing. This condition would undoubtedly reflect most unfavorably on the credit of the concern, since more debt is contracted on short-time while the total debt is growing relative to net worth and the surplus is showing no reinvested earnings. Suppose, further, that the Net Worth to Current Debt ratio has also decreased—meaning that the current debt is growing faster

than net worth, the final result would be exceedingly unfavorable to the credit standing of the firm from the standpoint of this one main credit factor. If, on the other hand, the reverse position and trend of the above ratios should have increased, then the credit position of the firm would have been placed in an exceedingly favorable light.

Combination analysis of disparate trends.—This illustration, in which all ratios unmistakably show either a favorable or an unfavorable aspect, is relatively simple of interpretation. But the question may arise: What weights are to be given to the respective ratios, in the final estimate, when their positions are opposite and their trends diverse? This problem is not so simple. Assuming now, for instance, that the Net Worth to Total Debt ratio is low and decreasing, but that the Surplus to Net Worth ratio is high and rapidly rising, the situation might not be difficult to evaluate, since it is clear that the weakening effect of the decrease in the former ratio could not be entirely offset by the strengthening effect of the latter. That is, although stockholders are leaving an increasing proportion of the earnings in the business, these are not sufficient to counteract the diminishing equity of the owners in the business in the face of a rapidly increasing debt. Meantime, let us further assume that the Current Debt to Total Debt ratio is low and decreasing, indicating that indebtedness is being covered more and more by long-time borrowing. This additional fact, from the standpoint of commercial credit, which assumes repayment over a relatively short period, must be interpreted as more favorable than would be the case if the ratio were high and tending upward. Long-time debt might have been incurred, too, with the intention of converting it into stocks at a favorable time. Furthermore, some leeway might be permitted as to indebtedness of longtime maturity, which could not be permitted with short-time obligations. The conclusion can be drawn at this point that the last two ratios indicate a sufficient number of favorable influences to counteract a moderate decrease in the Net Worth to Total Debt ratio. Should the Net Worth to Current Debt ratio increase, while the Net Worth to Funded Debt decreases in similar proportion, one should expect that the credit condition of the firm might be considered favorable, in spite of the increasing indebtedness relative to net worth.

As may be seen, when such complex conditions prevail with respect to the ratios, no numerical weight can be given to the relative trends of the ratios. Each practical case must be evaluated on its own basis of facts, and sound judgment is an indispensable factor in credit ratio analysis. There are great difficulties in the way of attempting to offer a purely theoretical explanation of the interpretation of credit ratios singly and in combination. The general explanation given above may serve, however, as a preliminary basis for the understanding of the following case analyses. Its ramifications and digressions will be better understood by applying it to several practical cases.

Practical ratio analysis of credit cases.—The cases chosen for the practical demonstration are represented by the statements and ratios of actual concerns. In order to cover, partially at least, the scope of a credit man's experience, seven firms have been selected. These firms represent the following lines of business:

A. Retail business.
   1. Department Store.

B. Wholesale business.
   2. Grocery.
   3. Hardware.

C. Manufacturing business.
   4. Shoes.
   5. Silk.
   6. Metals, Co. 1.
   7. Metals, Co. 2.

These cases have not been "dressed up" for the purpose of demonstrating that the principles here discussed and applied will work. The statements obtained from the seven firms in question have been subjected to slight modification in order to obscure their identity. The procedure described in the previous chapter has been followed in presenting the statements, summing up the significant items, and calculating the several ratios. Since no principle exists which is demonstrable with 100 per cent results, such will be the case also with the principles of credit ratio analysis—a fact we especially desire

to emphasize. Not that the principles are ineffective or impracticable, but that they require judgment and discretion in their application. This is true of every inexact science, and credit surely has not progressed beyond this stage.

In the following analysis of practical cases, the order of

TABLE

COMPARATIVE BALANCE SHEET

	Years Ending			
Assets:				
Current Assets:	*1914*	*1915*	*1916*	*1917*
Cash on Hand and on Deposit	$ 29,035	$ 31,683	$ 18,184	$ 377,906
Notes Rec. (customers)	13,632	57,371	73,549	45,801
Accounts Rec. (customers)	736,848	678,929	653,685	808,291
Merchandise Inventory	620,458	753,481	834,632	1,034,350
Total Current Assets	$1,399,973	$1,521,464	$1,581,050	$2,266,348
Fixed Assets	267,702	281,722	257,546	228,507
Other Assets:				
Notes Rec. (personal)	105,297	98,058	78,487	72,969
Accounts Rec. (personal)	37,765	37,143	46,367	54,004
Accounts Rec. (miscellaneous)	17,745	18,783	20,303	25,869
Investments	7,130	7,465	10,321	30,683
Prepaid Expenses	10,807	13,730	11,134	51,572
Total Other Assets	$ 178,744	$ 175,179	$ 166,612	$ 235,097
Total Assets	$1,846,419	$1,978,365	$2,005,208	$2,729,952
Liabilities:				
Current Liabilities:				
Notes Payable	$ 351,750	$ 394,550	$ 382,500	$ 152,000
Accounts Payable	118,209	114,779	120,895	33,232
Accrued Accounts	10,959	11,957	13,322	24,153
Reserve for Unpaid Salaries	5,968	15,000	14,000	16,825
Reserve for Federal Taxes	....	....	....	....
Total Current Liabilities	$ 486,887	$ 536,286	$ 530,717	$ 226,210
Net Worth				
Common Stock	600,000	600,000	600,000	1,200,000
Preferred Stock	600,000	600,000	600,000	800,000
Profit and Loss Surplus	159,531	242,075	274,486	503,738
Total Net Worth	$1,359,531	$1,442,075	$1,474,486	$2,503,738
Total Liabilities	$1,846,418	$1,978,361	$2,005,203	$2,729,948
Net Sales	....	$3,712,326	$3,806,912	$4,538,835

presentation is: a department store, as representative of the retail business; two wholesale concerns; and four manufacturing firms. The ratios are taken in order, as they relate to the five credit principles set forth above, and in the same order as those principles.

No. 1

OF A DEPARTMENT STORE

January 31

1918	*1919*	*1920*	*1921*	*1922*	*1923*
$ 54,994	$ 263,400	$ 199,776	$ 108,346	$ 73,266	$ 107,412
69,180	79,647	55,896	43,327	70,143	10,415
1,003,124	1,051,685	1,479,584	1,579,732	1,540,461	1,774,697
1,976,725	2,219,060	2,350,473	2,290,078	2,104,167	2,384,675
$3,104,023	$3,613,792	$4,085,729	$4,021,483	$3,788,037	$4,368,199
886,927	991,684	1,022,253	1,058,218	1,116,054	1,114,688
60,981	60,981	59,853	30,064	30,064	....
26,307	69,039	49,838	63,137	65,740	174,868
43,902	50,167	38,392	37,422	22,335	36,446
43,180	28,380	38,805	36,280	36,250	37,250
95,812	69,281	75,819	116,876	97,317	78,668
$ 270,182	$ 277,848	$ 262,707	$ 283,779	$ 251,707	$ 327,232
$4,261,132	$4,883,324	$5,370,689	$5,343,480	$5,155,798	$5,810,119
1,262,000	1,652,000	1,702,000	1,476,000	1,432,000	1,362,000
186,570	220,168	35,994	387,492	376,949	579,268
38,884	46,398	100,961	99,942	69,884	131,724
....	....	....	....	....	....
....	20,000	96,859	31,470	6,000	68,924
$1,487,454	$1,938,566	$1,935,814	$1,994,904	$1,884,833	$2,141,916
1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
1,113,200	1,193,800	1,146,200	1,126,800	1,086,800	1,057,600
460,477	550,954	1,088,672	1,021,774	984,162	1,410,601
$2,773,677	$2,944,754	$3,434,872	$3,348,574	$3,270,962	$3,668,201
$4,261,131	$4,883,320	$5,370,686	$5,343,478	$5,155,795	$5,810,117
$5,679,774	$7,156,396	$10,551,493	$12,633,403	$12,395,277	$13,418,230

TABLE

ITEMS FROM COMPARATIVE BALANCE SHEET

Balance Sheet Items:	Years Ending 1914	1915	1916	1917
Current Assets	$1,399,972	$1,521,462	$1,581,048	$2,266,347
Current Liabilities *	486,885	536,286	530,716	226,209
Total Debt	486,885	536,286	530,716	226,209
Net Working Capital †	913,087	985,177	1,050,332	2,040,138
Surplus	159,531	242,075	274,486	503,738
Net Worth	1,359,531	1,442,075	1,474,486	2,503,738
Net Worth plus Total Debt ‡ or Total Capital Used	1,846,416	1,978,360	2,005,202	2,729,947
Fixed Assets	267,702	281,722	257,546	228,507
Other Assets	178,743	175,177	166,609	235,094
Fixed Investments ¶	446,444	456,898	424,154	463,600
Receivables §	750,480	736,299	728,234	854,091
Merchandise Inventory	620,458	753,481	834,632	1,034,350
Net Sales	....	3,712,326	3,806,912	4,538,835
Normal Net Sales ‖	3,500,000	4,500,000	5,500,000	6,500,000
Net Profits	....	142,544	92,411	289,252

* Current Liabilities equal Total Debt.
† Net Working Capital equals Current Assets minus Current Liabilities.
‡ Net Worth plus Total Debt equals Total Capital, or Total Liabilities.

Sources and Nature of Capital Used by the Department Store.

Ratio of net worth to total debt.—As we have seen, the first of the ratios to throw light on the source of capital drawn upon by a concern is the Net Worth: Total Debt ratio. This ratio for the department store was calculated from 1914 to 1923. The relation between owned and borrowed capital in this business passed through about four different phases during the ten years. Up to 1917 a quite consistent relation was maintained which varied only within narrow limits. In 1916, the firm still possessed $2.78 of owners' capital for every $1 borrowed. This margin of safety was quite sufficient, which is equivalent to saying that the equity of the stockholders in the business is excellent. In 1917, this ratio jumps to 1106.7 per cent, indicating that the firm has greatly increased or actually doubled its capital stock. As will develop later, this policy obtained, because of a premeditated expansion. The third phase occurred in 1918-1919, when a strik-

No. 2

USED IN CALCULATING CREDIT RATIOS

January 31

1918	*1919*	*1920*	*1921*	*1922*	*1923*
$3,104,022	$3,613,790	$4,085,727	$4,021,481	$3,788,036	$4,368,197
1,487,453	1,938,566	1,935,813	1,994,902	1,884,832	2,141,915
1,487,453	1,938,566	1,935,813	1,994,902	1,884,832	2,141,915
1,616,570	1,675,225	2,149,915	2,026,579	1,903,204	2,226,283
460,477	550,954	1,088,672	1,021,774	984,162	1,410,601
2.773,677	2,944,754	3,434,872	3,348,574	3,270,962	3,668,201
4,261,130	4,883,320	5,370,685	5,343,476	5,155,794	5,810,115
886,927	991,684	1,022,253	1,058,218	1,116,053	1,114,688
270,181	277,847	262,705	283,778	251,705	327,231
1,157,107	1,269,529	1,284,957	1,341,995	1,367,758	1,441,918
1,072,304	1,131,331	1,535,479	1,623,958	1,610,603	1,876,111
1,976,725	2,219,060	2,350,473	2,290,078	2,104,167	2,384,675
5,679,774	7,156,396	10,551,493	12,633,403	12,395,277	13,418,230
7,500,000	8,500,000	9,500,000	10,500,000	11,500,000	12,500,000
176,238	309,477	657,718	66,898	82,387	176,073

‖ Fixed Assets plus Other Assets = Fixed Investments.
§ Receivables equal Accounts Receivables plus Notes Receivables (customers).
¶ Normal Net Sales are calculated from Net Sales by means of a straight line graph.

ing reduction in the Net Worth as related to Total Debt occurred, and the ratio fell to the lowest figure in the whole period. There is one, and only one, explanation to be drawn from a study of the actual statement figures, and that is that the firm undertook a heavy expansion both in current operations and in fixed assets. In 1919, the firm has only a margin of 51.9 cents over borrowed capital. In the light of its relationship to the business cycle, which was approaching the peak of prosperity, this firm allowed itself to be put in a vulnerable position. It increased its debt heavily at a dangerous time. But, in the last phase, from 1920 to 1923, the firm consistently maintains a margin of owners' capital equivalent to about 70 cents to a $1 of debt. It was able to keep within this proportion throughout the years of bad business in 1921 and 1922, even when its sales fell off slightly. The firm's ratio of 171 per cent in 1923 does not seem too high with this consideration in mind, especially when this ratio is compared with the Net Worth: Total Debt ratio of 55 department stores—which registered 202 per cent in 1923. The latter is calculated by

TABLE NO. 3

Credit Ratios Used in the Analysis

All Ratios Expressed in Percentages

Ratios:	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
A. Sources of Capital:										
1. Net Worth: Total Debt	279	269	278	1107	186	152	177	168	174	171
2. Surplus: Net Worth	12	17	19	20	17	19	32	31	30	38
3. Current Debt: Total Debt.....	100	100	100	100	100	100	100	100	100	100
B. Uses of Capital:										
4. Fixed Assets: Total Capital....	14	14	13	8	21	20	19	20	22	19
5. Current Assets: Total Capital..	76	77	79	83	73	74	76	75	73	75
6. Other Assets: Total Capital....	10	9	8	9	6	6	5	5	5	6
7. Net Worth: Fixed Investments..	305	315	348	540	239	232	268	249	239	254
8. Funded Debt: Fixed Investments	0	0	0	0	0	0	0	0	0	0
C. Supply and Position of Working Capital:										
9. Current Ratio	288	284	298	1002	209	186	211	202	201	204
10. Net Working Capital: Fixed Assets	341	350	408	893	182	169	210	192	171	200
11. Net Sales: Current Assets.....	0	244	241	200	183	198	258	314	327	307
12. Merchandise: Receivables	83	102	115	121	184	196	153	141	131	127
13. Net Sales: Receivables	0	504	523	531	530	633	687	778	770	715
14. Net Sales: Merchandise	0	493	456	439	287	322	449	552	589	563
D. Potential Productivity of Capital and Assets:										
15. Net Earnings: Net Worth	0	9.8	6.2	11.5	6.3	10.5	19.1	1.9	2.5	4.8
16. Merchandise: Fixed Assets	232	267	324	453	223	224	230	216	189	214
17. Net Sales: Current Assets: Same as (11) above.										
E. Rate of Expansion:										
18. Normal Net Sales: Fixed Assets	1307	1597	2136	2845	846	857	929	992	1030	1121
19. Net Sales: Fixed Assets	0	(1318)	(1478)	(1986)	(640)	(720)	(1032)	(1194)	(1111)	(1204)

the Robert Morris Associates and published in their *Monthly Bulletin.*[3]

[3] The following 100 per cent statement and selected ratios are those prepared by the Robert Morris Associates, Lansdowne, Pennsylvania. The 100 per cent statement represents the proportion that each item in the assets or liabilities bears in per cent to the total assets or liabilities. These percentages are derived from the combined statements of all department stores. That is, all the items are added, for the 34 and for the 55 stores respectively, in 1922 and 1923, forming one statement which combines all the Cash, Receivables, etc. The selected ratios are also calculated from the same combined statements.

DEPARTMENT STORES

100 PER CENT STATEMENT

No. of Companies	34	55
As of December 31	1922	1923
Cash	7.28	6.43
Rec.	20.52	23.06
Inventory	26.16	26.13
Listed Securities	4.02	3.46
Misc.	.15	1.54
Total Cur.	58.13	60.62
Total Fixed	41.87	39.38
Total	100.00	100.00
Payables	14.99	14.58
Taxes	1.79	1.40
Misc.	1.39	1.94
Total Cur.	18.17	17.92
Funded	8.32	10.31
Total Debt	26.49	28.23
Reserves	.36	1.98
Net Worth	73.15	69.79
Total	100.00	100.00
Sales	163.17	162.25

SELECTED RATIOS

Current	267	275
Mdse.: Rec.	127	127
Worth: Fixed	187	178
Worth: Debt	270	202
Sales: Rec.	680	729
Sales: Mdse.	476	497
Sales: Fixed	387	561
Sales: Worth	239	244

Ratio of surplus to net worth.—It is necessary next to inquire into the source of the owners' capital, in order to determine whether it has been obtained through reinvested earnings or new issues of stock. The ratio of Surplus: Net Worth demonstrates quite clearly that the firm is reinvesting earnings heavily. The ratio increases continually, except in 1918, when the doubling of the amount of capital stock disturbed the proportion, and when more money was required for dividends, whereas the expansion undertaken, at the same time in 1918, evidently was not completed; and in 1922, when the bad year for business cut down earnings and dividends were met probably out of surplus, or when inventory losses and other losses were written off, which also reduced the surplus account. However, in 1923, the allocations to the Surplus account were greatly augmented, which places the firm in a good light, since in this year the surplus increased to the point of 38.4 cents out of every $1 of net worth.

Ratio of current debt to total debt.—The evaluation of the firm's methods of obtaining capital is not complete, however, until the nature of its borrowings is taken into account. Whatever the ratio of Net Worth: Total Debt may be, the question as to whether the firm borrows on long-term or short-term obligations is exceedingly important. This is especially to be emphasized in the case of a mercantile house whose inventory control is greatly influenced by the methods of borrowing which it employs. Long-term borrowing fixes a more or less constant interest charge against a firm's working capital, but it insures the relatively continuous use of funds for current operations. Short-term borrowing eliminates the fixed interest charge when funds are not required, but this method of borrowing does not leave the firm's inventory completely under its control, for, when money becomes scarce, short-term debts are subject to call at periods of renewal. In this respect, the above firm does not show up well. Its debt is entirely in the form of short-term obligations, namely, payables and accruals. If compared with the combined figures for 55 department stores in 1923, which show that the funded debt is 10.31 per cent of the total liabilities, as compared with a current debt of 17.92 per cent, and which point to a Net Worth: Total Debt ratio of 202 per cent, the statements of this department store fall below these standards. The con-

TABLE No. 4

COMPARATIVE BALANCE SHEET OF A WHOLESALE HARDWARE CONCERN

Years Ending December 31——

Assets:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Cash on Hand	$ 47,060	$ 95,470	$ 136,738	$ 104,458	$ 92,364	$ 90,360
Notes Receivables	18,028	41,510	82,048	107,391	114,630	102,520
Accounts Receivables	661,912	933,887	984,977	876,372	854,432	898,960
Merchandise Inventory	1,434,091	1,349,630	1,702,026	779,054	917,850	1,180,650
Listed Securities	77,020	160,000	95,000	107,176	.....	.....
Total Current Assets	$2,238,693	$2,580,497	$3,000,789	$1,974,451	$1,979,276	$2,272,490
Fixed Assets	558,070	619,983	833,649	840,576	856,743	884,650
Total Assets	$2,796,763	$3,200,480	$3,834,438	$2,824,127	$2,836,020	$3,157,140
Liabilities:						
Notes Payables	$ 524,412	$ 539,332	1,071,232	837,000	722,200	880,520
Accounts Payables	255,458	345,151	341,057	158,430	171,870	212,000
Tax Reserve	1,488	85,045	50,000	13,030	7,183	8,560
Total Current Debt	$ 781,358	$ 969,528	$1,462,289	$1,008,460	$ 901,253	$1,101,080
Funded Debt	.....	100,000	100,000	100,000	275,000	400,000
Total Debt	$ 781,358	$1,069,528	$1,562,289	$1,108,460	$1,176,253	$1,501,080
Reserves	138,253	137,972	202,803	217,331	244,482	252,650
Capital	656,800	656,800	656,800	700,000	700,000	700,000
Surplus	1,220,352	1,336,180	1,412,546	798,336	715,285	703,410
Net Worth	$1,877,152	$1,992,980	$2,069,346	$1,498,336	$1,415,285	$1,403,410
Total Liabilities	2,796,763	3,200,480	3,834,438	2,824,127	2,836,020	3,157,140
Net Sales	5,690,734	7,260,860	6,708,698	4,246,127	3,947,642	3,280,950
Net Earnings	58,680	103,960	102,520	(Loss 10,580)	(Loss 2,690)	(Loss 10,230)

TABLE No. 5

ITEMS FROM COMPARATIVE BALANCE SHEET USED IN CALCULATING CREDIT RATIOS

Years Ending December 31, ——

Balance Sheet Items:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
1. Current Assets	$2,238,693	$2,580,497	$3,000,789	$1,974,451	$1,979,276	$2,272,490
2. Current Liabilities	781,358	969,528	1,462,289	1,008,460	901,253	1,101,080
3. Funded Debt	.....	100,000	100,000	100,000	275,000	400,000
4. Total Debt	781,358	1,069,528	1,562,289	1,108,460	1,176,253	1,501,080
5. Net Working Capital	1,457,335	1,610,969	1,538,500	965,991	901,253	1,171,410
6. Surplus	1,220,352	1,336,180	1,412,546	798,336	715,285	703,410
7. Net Worth	1,877,152	1,992,980	2,069,346	1,498,336	1,415,285	1,403,410
8. Total Capital	2,658,510	3,062,508	3,631,635	2,606,796	2,591,538	2,961,490
9. Fixed Assets	558,070	619,983	833,649	849,576	856,743	884,650
10. Receivables	679,932	975,397	1,067,025	983,763	969,062	1,001,480
11. Merchandise Inventory	1,434,691	1,349,630	1,702,026	779,054	917,850	1,180,650
12. Net Sales	5,690,734	7,260,860	6,708,698	4,246,127	3,947,642	3,280,950
13. Net Earnings	158,680	103,960	102,520	(Loss 10,580)	(Loss 2,690)	(Loss 10,230)

TABLE No. 6

CREDIT RATIOS USED IN THE ANALYSIS

All Ratios Expressed in Percentages

Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
A. Sources of Capital:						
1. Net Worth: Total Debt	240	186	141	148	157	93
2. Surplus: Net Worth	65	67	68	53	51	50
3. Current Debt: Total Debt	100	91	93	91	76	73
B. Uses of Capital:						
4. Fixed Assets: Total Capital	21	20	22	32	33	30
5. Current Assets: Total Capital	84	84	82	75	76	77
6. Other Assets: Total Capital	0	0	0	0	0	0
7. Net Worth: Fixed Investments	336	321	248	176	165	156
8. Funded Debt: Fixed Investments	0	16	12	12	32	45
C. Supply and Position of Working Capital:						
9. Current Ratio	286	266	205	195	219	206
10. Net Working Capital: Fixed Assets	261	260	185	114	105	132
11. Net Sales: Current Assets	254	281	223	215	200	144
12. Merchandise: Receivables	211	138	159	79	94	118
13. Net Sales: Receivables	836	744	628	432	407	328
14. Net Sales: Merchandise	396	537	394	545	430	278
D. Potential Productivity of Capital Assets:						
15. Net Earnings: Net Worth	8.4	5.2	4.9	—0.7	—0.2	—0.7
16. Net Sales: Current Assets			Same as (11) above.			
17. Merchandise: Fixed Assets	257	201	204	92	107	133
E. Rate of Expansion:						
18. Normal Net Sales: Fixed Assets			(No data)			
19. Net Sales: Fixed Assets	(1019)	(1171)	(804)	(490)	(460)	(371)

cern shows no funded debt and a ratio of Net Worth: Total Debt of only 171 per cent. Whether these methods of obtaining capital augur ill or well for this firm is a question which must be left pending for an answer until the analysis of other ratios has been completed. Its financial condition so far, however, judged on the basis of the ratio showing the sources of capital, does not appear to be very good.

Sources and nature of capital used by the wholesale hardware concern.—The wholesale hardware company whose credit ratios are shown above is located in the middle west. Therefore, its business is greatly influenced by the agricultural conditions, as these affect the retail hardware trade. This retail hardware trade may include sales to farmers, to merchants in the rural towns, and to the building trades in the surrounding territory. This *milieu* of the firm's business, as will be seen later, played a great part in shaping the concern's financial progress.

Ratio of net worth to total debt.—Beginning with the analysis of the company's Net Worth: Total Debt ratio, it is immediately apparent that it has difficulty in maintaining an adequate supply of capital. In 1918, it began with a very favorable relation between the owners' capital and borrowed capital. At that time, the company possessed $2.40 for every $1 of debt. This year, as we know, was a banner year for the agricultural communities. Expansion, the erection of new buildings, and improvements assumed marked proportions, drawing heavily for supplies upon the hardware lines. But, in the subsequent years, the concern gradually yielded its favorable debt position. By 1920, it possessed only 41 cents more of net worth than of debt. This unfavorable position was somewhat improved during 1921 and 1922, but, in 1923, a bad break brought the ratio to 93 per cent, meaning that the company has now only 93 cents of owned capital for every dollar borrowed. Technically, this approaches a position of insolvency, for, should the firm be required to liquidate, it might experience trouble in meeting its obligations, unless the assets sold yielded the amount of the debt. The ratio of 93 per cent is indeed low when compared with the ratio of 212 per cent, the ratio of the combined statements of 38

wholesale hardware concerns in 1923, as calculated by the Robert Morris Associates.[4]

Ratio of surplus to net worth.—The company shows a sound policy in managing its income from 1918 on through 1920. The ratio of Surplus : Net Worth indicates that, up to 1921, surplus constituted the major portion of the owners' capital contributions. In 1920, 68 per cent of the net worth consisted of surplus, or earnings reinvested. It was in 1921, however, that the trouble began. In that year the surplus was

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WHOLESALE HARDWARE

100 PER CENT STATEMENT

No. of Companies	35	38
As of December 31	1922	1923
Cash	3.89	3.49
Rec.	29.96	30.43
Inventory	39.07	48.56
Listed Securities	1.44	.47
Misc.	.23	.35
Total Cur.	74.59	83.30
Total Fixed	25.41	16.70
Total	100.00	100.00
Payables	23.43	24.55
Taxes	1.13	.92
Misc.	.74	1.51
Total Cur.	25.30	26.98
Funded	4.99	.77
Total Debt	30.29	27.75
Reserves	1.83	1.42
Net Worth	67.88	70.83
Total	100.00	100.00
Sales	156.24	157.19

SELECTED RATIOS

Current	272	262
Mdse.: Rec.	134	153
Worth: Fixed	315	479
Worth: Debt	205	212
Sales: Rec.	480	549
Sales: Mdse.	366	325
Sales: Fixed	664	996
Sales: Worth	234	234

cut in two and it continued to decline gradually during 1922 and 1923. It is quite evident that the firm took severe inventory losses in 1921, as shown by the inventory item, taking these losses out of the Surplus account. Whereas, in 1920, the surplus amounted to 68 cents in every $1 worth, it fell to 50 cents in 1923. It becomes clear, therefore, that the firm was forced to dig deeply into its surplus during the depression of 1921 to meet the heavy losses incurred. It seems that in 1922 and 1923, also, it became necessary to fall back on the surplus, although the losses sustained were not so great as in 1921.

Ratio of current debt to total debt.—We have seen that the firm was operating on a very liberal debt in 1923, while, at the same time, the surplus was being impaired through losses sustained, and the new stock issues were inadequate to offset the withdrawals from surplus or to keep pace with the increasing indebtedness. It is now pertinent to inquire into the nature of this concern's borrowings. The Current Debt: Total Debt ratio evidences the unfortunate fact that the firm is relying chiefly on short-term obligations to meet its capital requirements. Beginning in 1918 with no funded or long-term debt, the concern began to issue long-term obligations in 1919, which was increased to $275,000 and $400,000 in the years 1922 and 1923, respectively, leaving the ratio at 73 per cent, or 73 cents of current debt to every $1 of total indebtedness. Thus, from the standpoint of source and nature of capital invested in this wholesale hardware concern, the situation looks very unpromising at the end of 1923, since the facts are that borrowed capital exceeds the owners' investment, that nearly three-fourths of this borrowed capital has been secured on short-term obligations, and that the firm's earning capital has been impaired leading to withdrawals from surplus. Converting short-term debt into funded debt and increasing the owners' capital by means of new stock issues may save this firm. But final judgment must be suspended until the analysis has been completed.

Sources and nature of capital used by the wholesale grocery concern.—The concern now to be examined presents a very typical case in the wholesale grocery trade. It must be remembered that, in this line of business, the profits are only moderate, the demand relatively stable, and competition fairly

TABLE No. 7

COMPARATIVE BALANCE SHEET OF WHOLESALE GROCERY CONCERN Years Ending December 31, ——

Assets:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Cash	$ 32,759	$ 43,895	$ 54,817	$ 49,433	$ 51,005	$ 62,560
Receivables	308,860	346,980	405,219	364,278	393,124	420,500
Merchandise	560,495	582,062	567,372	470,159	518,204	585,640
Govt. Bonds	20,658	20,582	13,319	15,685	9,257	10,200
Current Assets	$ 923,457	$ 996,081	$1,042,804	$ 901,070	$ 972,706	$1,078,900
Fixed Assets	148,149	142,950	168,179	191,652	220,408	250,600
Miscellaneous	34,858	3,855	4,247	9,914	10,634	11,600
Total Assets	$1,106,464	$1,142,886	$1,215,230	$1,102,636	$1,203,748	$1,341,100
Liabilities:						
Notes Payable	$ 350,134	$ 399,358	410,021	312,280	323,014	364,580
Accounts Payable	62,250	50,120	39,800	40,760	58,600	55,220
Tax Reserve	12,118	14,178	5,225	4,014	3,670	3,860
Miscellaneous	12,206	8,726	3,769	2,426	4,472	5,660
Current Debt	$ 436,708	$ 472,382	$ 458,815	$ 359,480	$ 389,756	$ 429,320
Funded Debt	6,169	7,152	47,554	9,609	3,394	.....
Total Debt	$ 442,877	$ 479,534	$ 506,369	$ 369,089	$ 393,150	$ 429,320
Reserves	8,441	16,651	15,865	10,156	8,303	10,890
Capital Stock	600,000	600,000	600,000	700,000	750,000	850,000
Surplus	55,147	46,701	92,996	23,391	52,295	50,890
Net Worth	$ 655,147	$ 646,701	$ 692,996	$ 723,391	$ 802,295	$ 900,890
Total	1,106,465	1,142,886	1,215,230	1,102,636	1,203,748	1,341,100
Net Sales	2,779,355	2,763,050	3,766,302	2,893,599	2,890,093	3,620,890
Net Earnings	130,850	138,690	152,260	19,680	12,260	129,920

TABLE No. 8

ITEMS FROM COMPARATIVE BALANCE SHEET USED IN CALCULATING CREDIT RATIOS Years Ending December 31, ——

Balance Sheet Items:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
1. Current Assets	$ 923,457	$ 996,081	$1,042,804	$ 901,070	$ 972,706	$1,078,900
2. Current Liabilities	436,708	472,382	458,815	359,480	389,756	429,320
3. Funded Debt	6,169	7,152	47,554	9,609	3,394	.....
4. Total Debt	442,877	479,534	506,369	369,089	393,150	429,320
5. Net Working Capital	486,749	525,699	583,989	541,590	582,950	649,580
6. Surplus	55,147	46,701	92,996	23,391	52,295	50,890
7. Net Worth	655,147	646,701	692,996	723,391	802,295	900,890
8. Total Capital	1,098,024	1,126,235	1,199,365	1,092,480	1,195,445	1,330,210
9. Fixed Assets	148,149	142,950	168,179	191,652	220,408	250,600
10. Receivables	308,860	346,980	405,219	364,278	393,124	420,500
11. Merchandise Inventory	560,495	582,062	567,372	470,159	518,204	585,640
12. Net Sales	2,779,355	2,763,050	3,766,302	2,893,599	2,890,093	3,620,890
13. Net Earnings	130,850	138,690	152,260	19,680	12,260	129,920
14. Normal Net Sales	2,900,000	3,000,000	3,100,000	3,200,000	3,300,000	3,400,000

TABLE No. 9

CREDIT RATIOS USED IN THE ANALYSIS

All Ratios Expressed in Percentages

Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
A. Sources of Capital:						
1. Net Worth: Total Debt	147	134	136	196	204	210
2. Surplus: Net Worth	8	7	13	3	7	6
3. Current Debt: Total Debt	99	98	91	97	99	100
B. Uses of Capital:						
4. Fixed Assets: Total Capital	13	13	14	17	18	19
5. Current Assets: Total Capital	84	88	87	82	81	81
6. Other Assets: Total Capital	.3	.03	.04	.9	.9	.8
7. Net Worth: Fixed Investments	440	452	402	358	347	359
8. Funded Debt: Fixed Investments	4	5	28	5	2	0
C. Supply and Position of Working Capital:						
9. Current Ratio	211	210	227	251	249	251
10. Net Working Capital: Fixed Assets	328	368	347	282	264	259
11. Net Sales: Current Assets	300	277	361	321	297	336
12. Merchandise: Receivables	181	167	140	129	131	139
13. Net Sales: Receivables	899	796	929	794	737	861
14. Net Sales: Merchandise	496	475	664	615	560	618
D. Potential Productivity of Capital Assets:						
15. Net Earnings: Net Worth	19.9	21.4	21.5	2.7	1.5	14.4
16. Net Sales: Current Assets			Same as (11)	above		
17. Merchandise: Fixed Assets	378	407	337	245	235	234
E. Rate of Expansion:						
18. Normal Net Sales: Fixed Assets	1957	2098	1843	1669	1497	1356
19. Net Sales: Fixed Assets	1578	1881	2184	1435	1250	1443

active.[5] The wholesale grocery business does not show such violent fluctuations as is true of other more speculative industries. It would seem, then, that the credit ratios should show little variation, but it must be emphasized that this smaller variation is nevertheless highly significant because of the nature of the business as above indicated.

Ratio of net worth to total debt.—The trend of the Net Worth : Total Debt ratio manifests a distinct betterment in the firm's capital position. Although the ratio dropped in 1919, because of the increase in payables to meet a corresponding increase in receivables, and because of the decrease in surplus, it does not indicate more than a mere temporary maladjustment. For it is obvious that, in the subsequent years, in spite of the severe depression of 1921, the improvement in the relation between debt and owned capital is marked. In 1923, the company possesses $2.10 of stockholders' investment to every $1 borrowed.

Ratio of surplus to net worth.—The manner in which the owners' share of capital is obtained is evidenced by the Surplus : Net Worth ratio. This ratio does not show that the firm practices the policy of reinvesting earnings. Since profits usually are not large in the wholesale grocery trade, this source for new capital must to that extent be minimized. In 1921, 1922, and 1923, capital stock increases netted additional capital with which to carry on the fixed expansion and to increase in business. The relative stability and moderate growth of the enterprise naturally renders the policy of creating a large surplus unimportant. Besides, as we have seen, its business is in the line of necessities which insures a more or less continuous demand for its products.

Ratio of current debt to total debt.—The exceedingly favorable relation between Worth and Debt might become somewhat less reassuring in the light of the Current Debt : Total Debt ratio. It is evident from this ratio that the Debt is practically all in current form. The slight jump in funded debt in 1920 was immediately liquidated in 1921, evidently by the returns from new stock issues. But this reliance upon current borrowing does not, in the case of this company, point

[5] M. T. Copeland, *Harvard Review of Economic Statistics*, October, 1921. C. E. Fraser, *Harvard Business Review*, January, 1923.

to any weakness in financial policy, for the nature of the business does not warrant a large amount of long-time indebtedness. The reasons for this are: (1) Funded debt produces a permanent fixed interest charge against income, and it does this regardless of the trend of earnings; (2) the margin of profits in the wholesale grocery business is not large, therefore fixed charges should be small; (3) the wholesale grocery business should, above all other types of business, keep its assets in a liquid form. Its fixed assets are necessarily small, while its current operations—purchasing for resale—consumes the major portion of its capital requirements. Therefore, the owners' capital should not only furnish the fixed assets but leave a considerable margin for working capital purposes. Any more working capital required should be obtained as needed, and the source of borrowings should be over short periods, so that it can be readily relinquished, thereby relieving the firm of interest burdens. The firm possesses, according to the foregoing ratio analysis, a very favorable capital position in 1923. It conforms to the reasonable financial standards that should prevail in this line of business. If reference is made again to the financial standards developed by the Robert Morris Associates, this company compares quite favorably. The Net Worth: Total Debt ratio for 108 concerns is 191 per cent in 1923, while that of this concern is 210 per cent.[6]

[6] Robert Morris Associates credit standards for the wholesale grocers:

WHOLESALE GROCERS

100 PER CENT STATEMENT

No. of Companies	56	108
As of December 31	1922	1923
Cash	4.16	4.94
Rec.	29.86	29.14
Inventory	42.30	41.63
Listed Securities	.80	.39
Misc.	.41	.70
Total Cur.	77.53	76.80
Total Fixed	22.47	23.20
Total	100.00	100.00

Sources and nature of capital used by the shoe manufacturing concern.—The analysis now shifts to the manufacturing business. The first case to be studied is that of a shoe manufacturing company. This is a rather large concern with sales averaging around $30,000,000 per annum. Fixed assets loom larger than in the case of the previously analyzed mercantile houses, since manufacturing requires a plant, machinery, equipment, etc. However, the fixed assets of the shoe company here presented do not seem large relative to the volume of business done. This is the situation in lines of manufacturing, where the patents are controlled and the machinery is leased to the manufacturers, of which practice the shoe industry is a notable example. This characteristic which influences the size of investment in fixed assets must be borne constantly in mind in the present analysis. Attention must also be called to the fact that companies which lease their machinery have a rental charge against income according to the terms of the lease. These rentals may be regarded as equivalent to such fixed charges as are connected with the ownership of machinery by other firms.

Ratio of net worth to total debt.—Taking up the analysis of the Net Worth: Total Debt ratio, we are confronted with a more erratic behavior than was found in those previously studied. The company begins in 1918 with a very poor posi-

Payables	30.27	30.84
Taxes	.67	.72
Misc.	1.56	1.52
Total Cur.	32.50	33.08
Funded	.75	1.22
Total Debt	33.25	34.30
Reserves	.59	1.61
Net Worth	66.16	64.09
Total	100.00	100.00
Sales	245.11	242.38
SELECTED RATIOS		
Current	221	208
Mdse.: Rec.	138	139
Worth: Fixed	266	285
Worth: Debt	198	191
Sales: Rec.	793	832
Sales: Mdse.	562	581
Sales: Fixed	1043	1255
Sales: Worth	362	378

TABLE No. 10

COMPARATIVE BALANCE SHEET OF SHOE MANUFACTURING CONCERN

Years Ending December 31, ——

Assets:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Cash	$ 355,899	$ 303,064	$ 861,010	$ 636,293	$ 869,858	$ 680,933
Receivables	5,492,677	7,109,971	8,913,536	6,577,985	6,752,301	7,228,468
Merchandise	7,900,103	10,901,496	8,236,239	5,074,959	5,583,478	6,643,401
Listed Securities	50,000	258,859	....	....	....	....
Total Current Assets	$13,798,679	$18,573,390	$18,010,785	$12,289,237	$13,205,637	$14,552,802
Fixed Assets	1,480,097	1,508,486	1,457,147	1,399,316	1,402,220	1,604,409
Other Assets	410,712	130,514	369,055	438,687	427,739	183,950
Total Fixed Investments	$ 1,890,809	$ 1,639,000	$ 1,826,202	$ 1,838,003	$ 1,829,959	$ 1,788,359
Total Assets	$15,689,488	$20,212,390	$19,836,987	$14,127,240	$15,035,596	$16,341,161
Liabilities:						
Payables	7,067,544	7,814,989	8,705,401	4,336,907	4,082,000	5,254,263
Taxes	629,545	1,358,362	681,719	24,500	28,000	691,500
Miscellaneous	....	....	....	....	713,255	....
Total Current Liabilities	$ 7,697,089	$ 9,173,351	$ 9,387,120	$ 4,361,407	$ 4,823,255	$ 5,954,763
Funded Debt	20,000	....	....	....	....	....
Total Debt	$ 7,717,089	$ 9,173,351	$ 9,387,120	$ 4,361,407	$ 4,823,255	$ 5,945,763
Reserves	870,455	966,638	705,781	610,000	984,771	....
Capital Stock	5,000,000	7,000,000	8,000,000	8,500,000	8,500,000	9,000,000
Surplus	2,101,944	3,072,401	1,744,086	655,833	727,570	1,395,398
Net Worth	$ 7,101,944	$10,072,401	$ 9,744,086	$ 9,155,833	$ 9,227,570	$10,395,398
Total Liabilities	$15,689,488	$20,212,390	$19,836,987	$14,127,240	$15,035,596	$16,341,161
Net Sales	$30,825,715	$31,690,814	$37,307,526	$22,382,716	$24,782,015	$29,438,000

TABLE No. 11

ITEMS FROM COMPARATIVE BALANCE SHEET USED IN CALCULATING CREDIT RATIOS

Years Ending December 31, ——

	1918	*1919*	*1920*	*1921*	*1922*	*1923*
1. Current Assets	$13,768,679	$18,573,390	$18,010,785	$12,289,237	$13,205,637	$14,552,802
2. Current Liabilities	7,697,089	9,173,351	9,387,120	4,361,407	4,823,255	5,945,763
3. Funded Debt	20,000	....	....	....	....	....
4. Total Debt	7,717,189	9,173,351	9,387,120	4,361,407	4,823,255	5,945,763
5. Net Working Capital.....	6,101,590	9,400,039	8,623,665	7,927,830	8,382,382	8,607,039
6. Surplus	2,101,944	3,072,401	1,744,086	655,833	727,570	1,395,398
7. Net Worth	7,101,944	10,072,401	9,744,086	9,155,833	9,227,570	10,395,398
8. Total Capital	14,819,033	19,245,752	19,131,206	13,517,240	14,050,825	16,341,161
9. Fixed Assets	1,480,097	1,508,486	1,457,147	1,399,316	1,402,220	1,604,409
10. Fixed Investments	1,890,809	1,639,000	1,826,202	1,838,003	1,829,959	1,788,359
11. Receivables	5,492,677	7,109,971	8,913,536	6,577,985	6,752,301	7,228,468
12. Merchandise	7,900,103	10,901,496	8,236,239	5,074,959	5,583,478	6,643,401
13. Net Sales	30,825,715	31,690,814	37,307,526	22,382,716	24,783,015	29,438,000
14. Normal Net Sales.....	27,000,000	28,000,000	29,000,000	30,000,000	31,000,000	32,000,000
15. Net Earnings	1,025,600	1,906,500	986,500	Loss	178,650	1,680,409

TABLE No. 12

CREDIT RATIOS USED IN THE ANALYSIS

All Ratios Expressed in Percentages

Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
A. Source of Capital:						
1. Net Worth: Total Debt	92	110	104	210	191	175
2. Surplus: Net Worth	30	31	18	7	8	13
3. Current Debt: Total Debt	99	100	100	100	100	100
B. Uses of Capital:						
4. Fixed Assets: Total Capital	10	8	7	10	10	10
5. Current Assets: Total Capital	93	96	94	91	93	89
6. Other Assets: Total Capital	3	.3	1	3	3	1
7. Net Worth: Fixed Investments	375	624	534	498	504	581
8. Funded Debt: Fixed Investments	1.3	...	...	...	...	...
C. Supply and Position of Working Capital:						
9. Current Ratio	179	203	192	282	274	245
10. Net Working Capital: Fixed Assets	412	623	592	566	598	536
11. Net Sales: Current Assets	223	171	207	182	187	202
12. Merchandise: Receivables	143	153	92	77	83	92
13. Net Sales: Receivables	561	445	419	340	367	407
14. Net Sales: Merchandise	391	290	453	441	444	443
D. Potential Productivity of Capital and Assets:						
15. Net Earnings: Net Worth	14.4	18.9	10.1	Loss	1.9	16.1
16. Net Sales: Current Assets			Same as (11) above.			
17. Merchandise: Fixed Assets	533	722	565	363	399	414
E. Rate of Expansion:						
18. Normal Net Sales: Fixed Assets	1824	1856	1990	2144	2211	1994
19. Net Sales: Fixed Assets	1630	1934	2043	1218	1354	1646

tion. It possesses only 92 cents of owned capital to every $1 borrowed. After improving in 1919, it again sags in 1920, while, in 1921, the year of severe depression in the shoe industry, the phenomenal increase of the ratio produces an extraordinarily wide margin of owners' capital. A closer examination of the statement items reveals that this was accomplished by a huge reduction in the current debt corresponding to a great decline in the activity of the industry. It is evident that the firm was able to work off its overstocks without undue loss and, therefore, was able to reduce its liabilities. In 1922 and 1923, this ratio appears to be on the decline again. The standard figure of 48 boot and shoe manufacturers (Robert Morris Associates) was 275 per cent in 1923.[7] In compari-

[7] Standards of Boot and Shoe Manufacturers:

SHOE MANUFACTURERS

100 PER CENT STATEMENT

No. of Companies	31	48
As of December 31	1922	1923
Cash	5.33	6.38
Rec.	25.82	29.63
Inventory	35.43	40.54
Listed Securities	.03	.14
Misc.	.14	.19
Total Cur.	66.75	76.88
Total Fixed	33.25	23.12
Total	100.00	100.00
Payables	17.85	22.36
Taxes	.62	1.83
Misc.	2.37	.87
Total Cur.	20.84	25.06
Funded	.75	.24
Total Debt	21.59	25.30
Reserves	1.17	.91
Net Worth	77.24	73.79
Total	100.00	100.00
Sales	133.60	155.20
SELECTED RATIOS		
Current	297	271
Mdse.: Rec.	116	108
Worth: Fixed	233	263
Worth: Debt	261	275
Sales: Rec.	458	551
Sales: Mdse.	374	394
Sales: Fixed	399	610
Sales: Worth	170	241

son, as may be seen, this concern aims to operate on a very liberal debt.

100 PER CENT STATEMENT OF SHOE MANUFACTURING COMPANY

Date	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Cash	2.27	1.50	4.34	4.50	5.79	4.17
Rec.	35.01	35.18	44.93	46.56	44.91	44.23
Inventory	50.35	53.93	41.52	35.93	37.13	40.66
Listed Securities	.32	1.28	....	....	....	....
Total Cur.	87.95	91.89	90.79	86.99	87.83	89.06
Fixed	9.43	7.46	7.35	9.91	9.33	9.82
Miscellaneous	2.62	.65	1.86	3.10	2.84	1.12
Total Fixed	12.05	8.11	9.21	13.01	12.17	10.94
Total	100.00	100.00	100.00	100.00	100.00	100.00
Payables	45.05	38.66	43.88	30.69	27.15	32.15
Taxes	4.01	6.72	3.44	.18	.19	4.23
Miscellaneous	....	....	....	....	4.74	....
Total Cur.	49.06	45.38	47.32	30.87	32.08	36.38
Funded	.13	....	....	....	....	....
Total Debt	49.19	45.38	47.32	30.87	32.08	36.28
Reserves	5.55	4.79	3.56	4.32	6.55	....
Net Worth	45.26	49.83	49.12	64.81	61.37	63.62
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sales	196.47	156.79	188.07	158.44	164.82	180.15

Analysis of surplus to net worth.—With reference to the source of owned capital, the surplus amount decreased not only relatively, but absolutely, after 1919, although it gains considerably in 1923. The decrease in surplus in 1920 seems to have been accomplished either through paying cash, or stock dividends, or both. In 1921, it seems quite probable that the firm took large losses in the attempt to liquidate its stocks on hand. Nevertheless, the firm was able to withstand the shock of the liquidation, the severity of which is now common knowledge. The very good showing of the Surplus account in 1923 proves that the firm realizes the value of a good surplus in order to guide the company safely through bad times. The firm's management of income aids in inspiring confidence in its financial policy, and, therefore, adds support to its otherwise liberal debt.

Results obtained from current debt to total debt ratio.—The borrowing of this company is done exclusively on a short-

TABLE

COMPARATIVE BALANCE SHEET OF

Years Ending December

(Semiannually,

Assets:	1918	1919	1920
Cash	$ 253,800	$ 293,633	$ 325,319
Receivables	1,628,406	3,440,879	1,881,029
Merchandise	2,392,932	3,731,522	3,267,219
Total Current Assets	$4,386,760	$ 7,466,034	$ 5,473,567
Fixed Assets	4,246,704	4,006,899	3,965,519
Total Assets	$8,633,464	$11,472,933	$ 9,439,086
Liabilities:			
Payables	$1,064,890	$ 2,250,300	$ 960,500
Accruals	668,081	784,081	550,005
Total Current Liabilities	$1,732,971	$ 3,034,381	$ 1,510,505
Funded Debt	....	....	....
Total Debt	1,732,970	3,034,381	1,510,505
Capital Stock	6,000,000	6,500,000	6,500,000
Surplus	900,492	1,938,552	1,428,581
Total Liabilities	$8,633,462	$11,472,933	$ 9,439,086
Net Sales	8,373,413	10,028,788	12,395,245
Net Earnings	997,856	1,904,823	66,000

time basis. As a matter of fact, this is quite a general practice among shoe manufacturers, as the figures of the 48 companies' combined statement go to show.[8] It would seem undesirable, however, for this concern to operate on a 175 per cent Net Worth: Total Debt ratio, since its debt is in current form, and since it thereby subjects itself to possible embarrassment, provided credit became scarce. For a manufacturing concern this position is relatively less favorable than for a mercantile establishment, because the former must provide raw materials and labor, meet heavier fixed charges than a wholesale or retail concern, and, after the manufacturing period is bridged, must sell its product. The outstanding demands for an adequate supply of working capital would

[8] *Cf.* footnote on page 200.

No. 13

A SILK MANUFACTURING CONCERN

31, 1918-1920

1921-1923)

1921		1922		1923	
7–2	12–31	7–1	12–31	6–30	12–31
$ 426,145	$ 416,267	$ 492,186	$ 383,549	$ 486,559	$ 444,119
3,302,350	2,914,093	4,749,388	5,586,362	5,608,034	3,184,098
3,679,533	4,762,803	4,433,313	6,272,150	5,086,788	8,090,478
$ 7,408,027	$ 8,093,163	$ 9,674,886	$12,242,061	$11,181,381	$11,718,695
4,320,951	4,194,280	8,308,808	8,174,760	11,059,648	10,881,855
$11,728,978	$12,287,443	$17,983,694	$20,416,820	$22,241,029	$22,600,549
$ 1,843,007	$ 1,800,700	$ 2,953,600	$ 4,390,800	$ 2,107,100	$ 2,562,600
704,590	769,033	813,908	988,186	750,095	810,071
$ 2,547,597	$ 2,569,733	$ 3,767,508	$ 5,378,986	$ 2,857,195	$ 3,372,671
349,300	321,800	318,600	313,400	4,046,800	3,916,000
2,896,897	2,891,533	4,086,108	5,692,386	6,903,995	7,288,671
8,000,000	8,500,000	12,000,000	12,000,000	12,000,000	12,000,000
832,081	895,910	1,897,586	2,724,434	3,337,034	3,311,878
$11,728,978	$12,287,443	$17,983,694	$20,416,820	$22,241,029	$22,600,549
12,043,761	15,674,474	12,150,450	15,128,104	14,900,502	$ 8,894,762
1,208,243	1,039,540	665,637	1,681,206	1,105,237	367,446

thus come from the purchasing of raw materials, wages, fixed charges, and carrying the finished product until sold. A manufacturing concern has, therefore, a wider frontal exposure to attack made possible by a lack of owned capital. In view of this situation we may reach the provisional conclusion that our particular concern, at the end of 1923, leaves much to be desired with reference to the source and nature of the capital employed in its business.

Sources and nature of capital used by the silk manufacturing concern.—At the outset it is necessary to state that the silk manufacturing concern whose credit ratios are here considered produces silks chiefly of the staple variety. Its products are fabrics of the type used in nearly every line that consumes silk fabrics other than specialties, and are sold directly to large department stores, retailers, mail-order houses, jobbers,

TABLE

ITEMS FROM COMPARATIVE BALANCE SHEET

Yearly, December

(Semiannually,

	1918	*1919*	*1920*
Current Assets	$4,386,760	$ 7,466,034	$ 5,473,567
Current Liabilities	1,732,971	3,034,381	1,510,505
Funded Debt	....	....	....
Total Debt	1,732,971	3,034,381	1,510,505
Net Working Capital	2,653,789	4,431,653	3,963,062
Surplus	900,492	1,938,552	1,428,581
Net Worth	6,900,482	8,438,552	7,928,581
Total Capital	8,633,463	11,472,933	9,439,086
Fixed Assets	4,246,704	4,006,899	3,965,519
Receivables	1,628,406	3,440,879	1,881,029
Merchandise Inventory	2,392,932	3,731,522	3,267,219
Raw Materials	1,890,600	2,100,400	1,260,119
Finished and Partly Finished	503,332	1,631,122	2,007,100
Net Sales	8,373,413	10,028,788	12,395,245
Net Earnings	997,856	1,904,823	66,000
Normal Net Sales	7,000,000	9,000,000	11,000,000

manufacturers, etc., throughout the country. It manufactures, also, a few lines of novelties. Nevertheless, it is subject to many vicissitudes, from the standpoint of raw material as well as of demand for the product. We know that prices of raw silk fluctuate considerably and that the demand for silk is sensitive to the changes of fashion, incomes, and seasons of the year.[9] Since the silk manufacturing business is subject to a large variety of influences that render its financial control rather difficult, the succeeding analysis of this company is of primary interest and instructive from a credit standpoint.

Interpretation of net worth to total debt ratio.—As one would expect, the ratio of Net Worth: Total Debt exhibits a fluctuating tendency with a decided downward trend after 1920. The company began with a good showing in 1918, but in 1919 the debt increased much more rapidly than the worth. One needs to recall in this connection the break in raw silk prices which occurred in the early part of 1919, following the high war prices that had prevailed for silk for some time

[9] "Raw Silk Prices and the Business Cycle," *Harvard Review of Economic Statistics*, January, 1924.

No. 14

USED IN CALCULATING CREDIT RATIOS

31, 1918-1920

1921-1923)

1921		1922		1923	
7–2	12–31	7–2	12–31	6–30	12–31
$ 7,408,027	$ 8,093,163	$ 9,674,886	$12,242,061	$11,181,381	$11,718,695
2,547,597	2,569,733	3,767,508	5,378,986	2,857,195	3,372,671
349,300	321,800	318,600	313,400	4,046,800	3,916,000
2,896,897	2,891,533	4,086,108	5,692,386	6,903,995	7,288,671
4,860,430	5,523,430	5,907,378	6,863,075	8,324,186	8,346,024
832,081	895,910	1,897,586	2,724,434	3,337,034	3,311,878
8,832,081	9,395,910	13,897,586	14,724,434	15,337,034	15,311,878
11,728,978	12,287,443	17,983,694	20,416,820	22,241,029	22,600,549
4,320,951	4,194,280	8,308,808	8,174,760	11,059,648	10,881,855
3,302,350	2,914,093	4,749,388	5,586,362	5,608,034	3,184,098
3,679,533	4,762,803	4,433,313	6,272,150	5,086,788	8,090,478
1,160,500	2,760,700	2,000,300	2,960,150	1,600,900	4,890,360
2,519,033	2,002,103	2,433,013	3,312,000	3,485,888	3,200,118
12,043,761	15,674,474	12,150,450	15,128,104	14,900,502	8,894,762
1,208,243	1,039,540	665,637	1,681,206	1,105,237	367,446
12,000,000	13,000,000	14,000,000	15,000,000	16,000,000	17,000,000

previous. Evidently this firm was caught with large inventories of raw silk on hand. It seems that heavy purchases were made which necessitated considerable borrowing. In 1920 the concern suffered heavily, although it was seemingly able to work its goods off in the market. The corresponding reduction of the current obligations, with some impairment of the net worth, caused the firm to produce a remarkably good ratio. But its hard times were yet to come. The continued depression, on the one hand, and the expansion of the firm, on the other, left the firm with only $2.10 of owned capital to $1 of borrowed in 1923. This would indicate that the concern was encountering difficulty in keeping out of debt.

Ratio of surplus to net worth.—Further light is thrown on the firm's capital position in 1923 by the course of the Surplus: Net Worth ratio, although the management of its income is somewhat obscured for the lack of a complete income statement. This much can be safely gathered, that the firm met severe reverses in 1920, again in the latter part of 1921, and in the first half of 1922. Its surplus was heavily reduced. The policy of this firm seems to have been to

TABLE No. 15

CREDIT RATIOS USED IN THE ANALYSIS

All Ratios Expressed in Percentages

Ratios:	1918	1919	1920	1921 7/2	1921 12/31	1922 7/1	1922 12/31	1923 6/30	1923 12/31
A. Source of Capital:									
1. Net Worth: Total Debt	398	278	525	305	325	340	259	222	210
2. Surplus: Net Worth	15	28	22	9	11	14	23	28	28
3. Current Debt: Total Debt	100	100	100	88	89	92	94	41	46
B. Uses of Capital:									
4. Fixed Assets: Total Capital	49	35	42	37	29	46	40	50	48
5. Current Assets: Total Capital	51	65	58	63	71	54	60	50	52
6. Other Assets: Total Capital	...	...	...	...	...	...	...	...	...
7. Net Worth: Fixed Investment	162	211	200	205	224	167	180	139	141
8. Funded Debt: Fixed Investments	...	...	...	8	7.6	3.8	3.8	36	36
C. Supply and Position of Working Capital:									
9. Current Ratio	253	246	362	291	315	257	228	391	347
10. Net Working Capital: Fixed Assets	62	111	110	112	132	71	84	75	77
11. Net Sales: Current Assets	191	134	226	163	194	125	123	133	76
12. Merchandise: Receivables	147	108	174	111	163	93	112	91	254
13. Net Sales: Receivables	514	291	659	365	538	256	271	266	272
14. Net Sales: Merchandise	349	369	379	327	329	274	241	293	110
D. Potential Productivity of Capital and Assets:									
15. Net Earnings: Net Worth	14.4	22.5	.8	13.7	11.5	4.6	11.4	7.2	2.4
16. Net Sales: Current Assets				Same as (11) above.					
17. Merchandise: Fixed Assets	56	93	82	85	114	53	77	46	74
E. Rate of Expansion:									
18. Normal Net Sales: Fixed Assets	165	224	277	259	310	168	183	145	156
19. Net Sales: Fixed Assets	197	250	313	179	374	146	185	135	81

convert its earnings and surplus into capital stock by means of a stock dividend. This renders the interpretation of the Surplus: Net Worth ratio somewhat difficult.

Ratio of current debt to total debt.—What has been inferred from the trend of the above two ratios receives ample support in the course of the Current Debt: Total Debt ratio. Up to the end of 1920, when the company maintained a very favorable margin of owners' capital, the current debt consumed the total debt item. But, thereafter, recourse to long-term obligations was in evidence. Although the item of funded debt had remained small, it suddenly burst forth with very large totals in 1923. It seems quite clear that the firm was able to meet practically all the capital requirements due to the growth in business and fixed assets from its earnings and stockholders' investments until 1922. Up to this year, needed additional funds for current operations were obtained by short-term borrowing. In 1923, however, the earnings of the business as well as new owners' contributions became insufficient to take care of the increasing need for capital. Although the net worth increased slightly, the firm's policy of heavy expansion in both current and fixed assets operations necessitated the adoption of long-term borrowing. In the absence of any authoritative financial standards for the silk manufacturing industry, it is difficult to evaluate this firm's capital position at the end of 1923. This much, however, is manifest, that, although it began with a strong capital position, it has gradually weakened its financial control. Not only has the Net Worth: Total Debt ratio reached its lowest point in 1923, but this debt has been incurred largely because of a seemingly unsound expansion policy. Its strength lies in its good-sized surplus and in its better position to control its borrowings, since more has been put in the form of long-term obligations. Whether the firm has seriously impaired its credit standing, because of the rapid expansion with other people's money, remains to be seen.

Sources and nature of capital used by two specialty metal manufacturing concerns.[10]—In submitting together the

[10] The abbreviated expressions of "Co. 1" and "Co. 2" will be used to designate Company 1 and Company 2 throughout the discussion. These companies are taken from materials for lectures used by Mr. Alex. Wall at the Wharton School, University of Pennsylvania.

TABLE No. 16

COMPARATIVE BALANCE SHEETS OF TWO SPECIALTY METALS MANUFACTURING CONCERNS

Years Ending December 31, ——

Company 1	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Cash	$ 3,132.30	$ 3,915.27	$ 4,306.50	$ 4,785.70	$ 4,470.93	$ 4,120.00
Receivables	27,234.27	32,103.50	32,956.47	39,167.23	32,658.93	36,800:00
Merchandise	31,184.54	39,306.60	36,793.17	36,017.22	30,466.53	25,500.00
Current Assets	$ 61,551.11	$ 75,325.37	$ 74,056.14	$ 79,970.15	$ 67,596.39	$ 66,420.00
Fixed Assets	51,542.54	50,887.00	59,500.19	61,073.22	61,000.00	61,000.00
Total	$113,093.65	$126,212.37	$133,556.33	$141,043.37	$128,596.39	$127,420.00
Notes and Accounts Payables	$ 30,168.21	$ 35,610.84	$ 32,878.17	$ 34,764.42	$ 31,319.22	$ 30,750.00
Tax Reserve	....	1,566.00	3,124.00	4,000.00	1,570.00	2,420.00
Current Debt	$ 30,168.21	$ 37,176.84	$ 36,002.17	$ 38,764.42	$ 32,889.22	$ 33,170.00
Funded Debts	19,575.00	15,268.00	12,520.00	7,916.00	3,900.00	....
Total Debt	$ 49,743.21	$ 52,444.84	$ 48,522.17	$ 46,680.42	$ 36,789.22	$ 33,170.00
Reserves						
Capital	$ 40,000.00	$ 40,000.00	48,000.00	56,000.00	56,000.00	56,000.00
Surplus	23,350.44	33,767.53	37,034.16	38,362.95	35,807.17	38,250.00
Net Worth	63,350.44	73,767.53	85,034.16	94,362.95	91,807.17	94,250.00
Total	$113,093.65	$126,212.37	$133,556.33	$141,043.37	$128,596.39	$127,420.00
Sales	144,855.00	180,090.00	199,665.00	203,580.00	187,920.00	198,560.00

Company 2

Cash	$ 1,566.00	$ 2,192.40	$ 2,505.60	$ 2,818.02	$ 3,052.92	$ 2,050.00
Receivables	19,938.31	25,419.31	24,636.31	26,202.31	25,575.91	23,500.00
Merchandise	10,698.91	18,137.41	24,088.32	28,786.21	31,237.17	34,450.00
Current Assets	$ 32,203.22	$ 45,749.12	$ 51,230.13	$ 57,806.54	$ 59,866.00	$ 60,000.00
Fixed Assets	19,575.60	19,575.00	23,490.00	35,040.50	47,375.00	54,370.00
Total	$ 51,778.22	$ 65,324.12	$ 74,720.13	$ 92,847.04	$107,241.00	$114,370.00
Notes and Accounts Payables	$ 15,558.21	$ 21,822.21	$ 24,954.21	$ 27,538.11	$ 29,104.11	$ 34,650.00
Tax Reserve	....	780.00	780.00	1,400.00	1,575.00	1,200.00
Current Debt	$ 15,558.21	$ 22,602.21	$ 25,734.21	$ 28,938.11	$ 30,679.11	$ 35,850.00
Funded Debts	9,670.00	12,000.00	15,660.00	23,500.00	27,400.00	33,290.00
Total Debt	$ 25,228.21	$ 34,602.21	$ 41,394.21	$ 52,438.11	$ 58,079.11	$ 69,140.00
Reserves						
Capital	23,500.00	23,500.00	23,500.00	27,500.00	35,000.00	35,000.00
Surplus	3,050.01	7,221.91	9,825.92	12,908.93	14,161.89	10,230.00
Net Worth	26,550.01	30,721.91	33,325.92	40,408.93	49,161.89	45,230.00
Total	$ 51,778.22	$ 65,324.12	$ 74,720.13	$ 92,847.04	$107,241.00	$114,370.00
Net Sales	86,130.00	105,705.00	125,280.00	140,940.00	122,931.00	124,650.00

TABLE No. 17

Items from Comparative Balance Sheet Used in Calculating Credit Ratios

Years Ending December 31, ——

Company 1	1918	1919	1920	1921	1922	1923
1. Current Assets	$ 61,551.11	$ 75,325.37	$ 74,056.14	$ 79,970.15	$ 67,596.39	$ 66,420.00
2. Current Liabilities	30,168.21	37,176.84	36,002.17	38,764.42	32,889.22	33,170.00
3. Funded Debt	19,575.00	15,268.00	12,520.00	7,916.00	3,900.00	....
4. Total Debt	49,743.21	52,444.84	48,522.17	46,680.42	36,789.22	33,170.00
5. Net Working Capital	31,383.00	38,149.00	38,054.00	41,206.00	34,707.00	33,250.00
6. Surplus	23,350.44	33,767.53	37,034.16	38,362.95	35,807.17	38,250.00
7. Net Worth	63,350.44	73,767.53	85,034.16	94,362.95	91,807.17	94,250.00
8. Total Capital	113,093.65	126,212.37	133,556.33	141,043.37	128,596.39	127,420.00
9. Fixed Assets	51,542.54	50,887.00	59,500.19	61,073.22	61,000.00	61,000.00
10. Receivables	27,234.27	32,103.50	32,956.47	39,167.23	32,658.93	36,800.00
11. Merchandise	31,184.54	39,306.60	36,793.17	36,017.22	30,466.53	25,500.00
12. Net Sales	144,855.00	180,090.00	199,665.00	203,580.00	187,920.00	198,560.00
13. Normal Net Sales	164,000.00	172,000.00	180,000.00	188,000.00	196,000.00	204,000.00
14. Net Earnings	22,380.00	26,560.00	28,460.00	10,680.00	15,050.00	21,950.00
Company 2						
1. Current Assets	$ 32,203.22	$ 45,749.12	$ 51,230.13	$ 57,806.54	$ 59,866.00	$ 60,000.00
2. Current Liabilities	15,558.21	22,602.21	25,734.21	28,938.11	30,679.11	35,850.00
3. Funded Debt	9,670.00	12,000.00	15,660.00	23,500.00	27,400.00	33,290.00
4. Total Debt	25,228.21	34,602.21	41,394.21	52,438.11	58,079.11	69,140.00
5. Net Working Capital	16,645.00	23,147.00	25,496.00	28,868.00	29,187.00	24,150.00
6. Surplus	3,050.01	7,221.91	9,825.92	12,908.93	14,161.89	10,230.00
7. Net Worth	26,550.01	30,721.91	33,325.92	40,408.93	49,161.89	45,230.00
8. Total Capital	51,778.22	65,324.12	74,720.13	92,847.04	107.241.00	114,370.00
9. Fixed Assets	19,575.00	19,575.00	23,490.00	35,040.50	47,375.00	54,370.00
10. Receivables	19,938.31	25,419.31	24,636.31	26,202.31	25,575.91	23,500.00
11. Merchandise	10,698.91	18,137.41	24,088.32	28,786.21	31,237.17	34,450.00
12. Net Sales	86,130.00	105,705.00	125,280.00	140,940.00	122,931.00	124,650.00
13. Normal Net Sales	96,000.00	104,000.00	112,000.00	120,000.00	128,000.00	136,000.00
14. Net Earnings	12,750.00	13,690.00	15,890.00	3,890.00	2,350.00	Loss 1,650.00

statement of these two companies, of approximately equal size, an attempt is made to show the value of comparative statement analysis. Much is to be gained by such a comparative credit analysis, since it demonstrates how different financial policies may lead to different financial results. Here are two small manufacturing companies of metal specialty products located in the same city. Their products consist of special castings, appliances, tools, and other specialty items sold in connection with the hardware business. A comparison of their sales indicates that Company 1 does a somewhat larger volume of business than Company 2. The total capital employed by the former is also larger, although, at the end of the period, the latter gains considerably in this respect, so that the difference is greatly lessened. These two companies offer an excellent opportunity for comparison on the basis of size, volume of business, total capital employed, nature of business, location, and markets. It is the purpose now to proceed with a comparative analysis of the credit ratios of these companies.

Comparison of ratios of net worth to total debt, and surplus to net worth.—The ratios of Net Worth: Total Debt of these two concerns show a striking divergency in their trend. The ratio of Co. 1 increases consistently and in a marked degree from 1918 to the end of 1923. The company begins in 1918 with $1.27 of worth to $1 of debt, while in 1923 this worth is $2.84. This demonstrates an exceedingly favorable capital position and, what is a more outstanding sign of strength, is the rapid and continuous growth in this margin of owned over borrowed capital. Contrariwise, the ratio of Co. 2 shows an unfavorable trend. This concern begins in 1918 with $1.05 worth and thereafter rapidly loses ground up to the end of the period, with the exception of a slight recovery in 1922. At the end of 1923, Co. 2 shows the extremely precarious capital position of 65 cents of owners' capital to every dollar of debt. On the basis of this ratio, the two companies evidence a striking dissimilitude as to financial policy. Co. 1 leans to an increasing extent upon its own capital, while Co. 2 aims to operate on borrowed capital. The policy of relying on outside capital has been adopted by Co. 2, because of rapid expansion in its business. The sales of this company have increased relatively more than those of Co. 1.

TABLE No. 18

CREDIT RATIOS USED IN THE ANALYSIS

All Ratios Expressed in Percentages

Company 1

Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
A. Sources of Capital:						
1. Net Worth: Total Debt	127	140	175	202	249	284
2. Surplus: Net Worth	36	45	43	41	39	41
3. Current Debt: Total Debt	61	71	74	83	89	100
B. Uses of Capital:						
4. Fixed Assets: Total Capital	45	40	45	43	47	48
5. Current Assets: Total Capital	55	60	55	57	53	52
6. Other Assets: Total Capital	...	...	...	...	...	...
7. Net Worth: Fixed Investments	122	144	142	154	150	154
8. Funded Debt: Fixed Investments	38	30	21	13	6	...
C. Supply and Position of Working Capital:						
9. Current Ratio	204	199	205	206	205	200
10. Net Working Capital: Fixed Assets	61	75	64	67	57	54
11. Net Sales: Current Assets	235	239	270	255	278	299
12. Merchandise: Receivables	114	122	111	91	93	69
13. Net Sales: Receivables	531	561	605	519	575	540
14. Net Sales: Merchandise	464	458	542	565	616	779
D. Potential Productivity of Capital and Assets:						
15. Net Earnings: Net Worth	35	36	33	11	16	23
16. Net Sales: Current Assets			Same as (11) above.			
17. Merchandise: Fixed Assets	61	77	62	67	50	42
E. Rate of Expansion:						
18. Normal Net Sales: Fixed Assets	318	338	302	308	321	334
19. (Net Sales: Fixed Assets)	(281)	(353)	(335)	(333)	(308)	(325)

Company 2

Ratios:	1918	1919	1920	1921	1922	1923
A. Sources of Capital:						
1. Net Worth: Total Debt	105	88	80	77	84	65
2. Surplus: Net Worth	11	24	29	32	29	22
3. Current Debt: Total Debt	62	65	62	55	53	52
B. Uses of Capital:						
4. Fixed Assets: Total Capital	37	29	31	38	44	48
5. Current Assets: Total Capital	63	71	69	62	56	52
6. Other Assets: Total Capital	...	...	...	...	...	...
7. Net Worth: Fixed Investments	135	156	141	115	104	83
8. Funded Debt: Fixed Investments	49	61	67	67	58	61
C. Supply and Position of Working Capital:						
9. Current Ratio	206	202	199	199	195	167
10. Net Working Capital: Fixed Assets	85	118	109	82	62	44
11. Net Sales: Current Assets	267	231	245	244	205	208
12. Merchandise: Receivables	53	71	97	109	122	142
13. Net Sales: Receivables	432	415	508	537	480	530
14. Net Sales: Merchandise	805	582	520	589	393	362
D. Potential Productivity of Capital and Assets:						
15. Net Earnings: Net Worth	48	44	48	9.6	4.7	—3.6
16. Net Sales: Current Assets			Same as (11) above.			
17. Merchandise: Fixed Assets	55	92	102	82	66	63
E. Rate of Expansion:						
18. Normal Net Sales: Fixed Assets	490	531	477	342	270	250
19. (Net Sales: Fixed Assets)	(440)	(540)	(533)	(402)	(259)	(229)

The total capital of Co. 2 more than doubled during the period. In comparison, that of Co. 1 increased relatively little. According to the accepted principles of business finance, it would seem more judicious for Co. 2 to have financed its rapid expansion with reinvested earnings or new issues of stock instead of borrowing so heavily. It is needless to point out the weakened position in which Co. 2 finds itself in 1923. Besides being burdened with a heavy interest charge, this concern is in an extremely vulnerable capital position. Perhaps with only slight reverses, it might easily find itself in the hands of the creditors. The comparative capital strength of Co. 1 requires no further emphasis.

A comparative study of the Surplus: Net Worth ratios of these two companies nets conclusions similar to those drawn above. The surplus accumulations of Co. 1 run parallel with the growth in capital stock issues, and the relation of surplus to net worth is consistently maintained around 40 per cent. This shows a sound policy with reference to the management of income, for a reasonable sum is reinvested in the business each year, with the exception of 1922. Co. 2, also, consistently turned back into the business a portion of its earnings, except in 1923, when a reduction in the Surplus account occurred. The proportion of Surplus to Net Worth of this company yields a much lower percentage than that of Co. 1. This indicates that Co. 2 is either paying out too much of its profits in dividends, or that its charges against income are high on account of its heavy interest payments for the use of the large amount of borrowed capital. Either practice seems highly undesirable, although the first is optional, while the second is enforced. The earnings of Co. 2 surely do not warrant excessive interest charges.

Analysis of methods of borrowing.—Turning now to the proportion of Current Debt to Total Debt, a marked difference in policy is again seen. Whereas Co. 1, in 1918, possessed a funded debt of $19,575, it gradually wiped out this indebtedness by the end of the period. There is evidence that the company's earning power was sufficient to amortize its funded debt in proportional amounts until paid, leaving only a current indebtedness sufficient to supply working capital. Co. 2, on the other hand, began with a proportion of current to total debt similar to Co. 1 in 1918, but instead

of amortizing its funded debt, Co. 2 increased this form of borrowing, so that, at the end of 1923, the total indebtedness was equally distributed, approximately, between short-term and long-term obligations. This occurred, as must be remembered, with a great increase of borrowing as compared with stockholders' investment. Of course, by having a large proportion of its indebtedness in long-time form, Co. 2 could fare better than if more of its debt were in the form of current borrowing, provided its earning remained sufficient to meet the interest charge. The conclusions to be drawn regarding the sources and nature of capital employed by these two concerns and the credit significance of those conclusions are as follows: That Co. 1 possesses an enviable position of strength and financial soundness, for the reason that the owners contribute most of the capital used in the business, and that its borrowing constitutes only a reasonable amount for current operating purposes; that Co. 2 evidences a rather weak position, for the reason that the creditors supply by far the larger proportion of capital, so that the situation is approaching the dangerous point of possible inability on the part of the firm to meet interest charges, or to continue borrowing in the face of a general monetary stringency, of a declining demand for its products, or of increasing cautiousness on the part of its creditors.

Recapitulation—

A. Department Store—Ratios cannot be regarded as very good.
B. Wholesale Hardware—Ratios indicate that trouble is ahead.
C. Wholesale Grocery—Ratios point to a very good condition.
D. Shoe Manufacturing—Ratios evidence only a fair position.
E. Silk Manufacturing—Ratios show that firm is still strong.
F. Co. 1 Manufacturing—Ratios present a very strong concern.
G. Co. 2 Manufacturing—Ratios augur future difficulties.

References

Bliss, "Financial and Operating Ratios in Management," Chapters xxiii, xxiv, xxxvii, xxxix.
"American Institute of Banking," "Credits," pp. 222-224.
Wall, "Analytical Credits," pp. 147-152.

CHAPTER VIII

CREDIT RATIO ANALYSIS OF THE SECOND FACTOR IN CREDIT; THE USES MADE OF CAPITAL INVESTED AND ITS DISTRIBUTION AMONG THE ASSETS.

Meaning of factor.—Having found how it is possible, by means of credit analysis, to determine the nature and sources of business capital, let us see what bearing the development of credit ratios has upon the second factor—how it is possible, through them, to discover the uses to which this capital has been put, and in what proportions it has been distributed among the various assets of a business. Before proceeding to the analysis of the following cases, let us emphasize the three phases of this second important consideration in credit:

1. It must be determined to what uses the total capital invested in the business has been put.
2. The degree of efficiency that is maintained in keeping just proportions between the various uses—meaning the law of capital proportions, or the median between safety and profitableness, applicable to every business.
3. As in case of the first factor, future control over the finances of the business, as predicated upon the first two aspects.

In a sense this second credit factor embraces the "ability" element, as it is popularly termed, in credit risks, because it is indicative of whatever ability is displayed in the use of the funds invested in a business. There are, as we know, two fundamental necessities in production—capital and labor. As regards labor, management seeks to obtain the maximum returns compatible with the state of mind and body of the laborers. Labor is associated inseparably with human beings who think and feel, and who, in the final analysis, must deter-

mine the amount of productive effort they will yield under any given type of management. Labor, in other words, can give in full, or can withhold, all, or in part, its productive effort. With capital it is otherwise. Capital has no will of its own; it is a passive production factor. It will yield returns in proportion to the degree of efficiency exercised in its management. Efficient financial management means the effective use of capital employed in a business, which involves (*a*) the *selection* of the safest and most productive uses from many alternatives; and (*b*) the *combination* of these safe and productive uses in such efficient proportions as to yield the maximum returns at minimum costs. The extent to which a business enterprise has followed the above principles in utilizing invested capital may be gathered from its financial reports, which should be studied with the following considerations in mind:

1. The proportional amounts of the total capital invested in the business distributed among the three classes of assets—"fixed," current," and "other assets."
2. The extent to which owned capital invested covers the fixed investments.
3. The extent to which long-time borrowed capital covers the fixed investments.
(4. If desired, the amount of owned capital present in the business, in proportion to the supply of gross working capital—current assets.)

Use of financial standards.—So-called financial standards are often said to be exceedingly helpful in determining whether the capital employed in a business has been put to relatively correct uses, and what proportions have been maintained between its uses. But, when the attempt is made to apply averages or standards, derived from many concerns, to an individual enterprise, insurmountable difficulties are encountered. What is "normal" for an enterprise? The diverse conditions under which individual firms operate, as well as the varying abilities of different business administrators, leave the answer to this question unsettled. So that, for purposes of credit analysis, a more practical method is to be found in the employment, not of "averages" or "standards," as a basis of comparison, but of the figures which represent the trend

of conditions within the enterprise itself, over a period of years. A comparison of the most recent ratios of a single firm with earlier ones yields fairly good material for interpretation. The earlier ratios could be stated in averages, if care be taken in selecting the years covered by those averages. These should include years selected from periods of depression equal in number to those chosen from periods of prosperity. It is true that individual enterprises may precede or lag behind the general business cycle, and, in this case, it is often desirable to use the firm's own cycle, its own succession of peaks and low points, calculated on the basis of the ratios constructed from the firm's statements, in selecting the years to be averaged. These averages of the firm's own ratios are really more practical standards for comparing present ratios than are the rather mythical "averages" or "standards" above mentioned; for, in credit ratio analysis, the specific conditions prevailing in an enterprise are, after all, the important elements in the firm's credit worth. In spite of the importance of the trend of general business conditions, the comparison of the credit ratios of one firm with the general averages for many concerns is really too far-fetched for practical adoption. In the absence, then, of more homogeneous conditions in business, and of more applicable financial "standards" for practical use, the firm's own past ratios furnish not only better "standards" but also safer ones as guides to the credit investigator.

Credit ratios as measures of uses and distribution of capital.—The first credit ratios that we find to be useful in connection with the credit factor under discussion involves the relations between each of the three groups of assets and the total capital invested. They are expressed as follows:

$$(a)\quad \frac{\text{Fixed Assets}}{\text{Net Worth} + \text{Total Debt}} \times 100 = \text{Ratio or Percentage.}$$

$$(b)\quad \frac{\text{Current Assets}}{\text{Net Worth} + \text{Total Debt}} \times 100 = \text{Ratio or Percentage.}$$

$$(c)\quad \frac{\text{Other Assets}}{\text{Net Worth} + \text{Total Debt}} \times 100 = \text{Ratio or Percentage.}$$

Items in total capital.—In calculating the denominators, which are the same in the three ratios, a procedure similar to

that outlined in the previous chapter must be followed. A brief summary of the items may be stated here:

Net Worth equals { Capital Stock: Common, Preferred; Surplus: Undivided } Minus { Goodwill; Stock in Treasury; Overvalued: Patents and Copyrights; Other Fictitious Assets }

Total Debt equals { Notes, Acceptances, and Accounts Payable; Accruals—Wages, Interest, Taxes, Insurance, etc.; Mortgages; Bonds; Other Long-time Debt }

Meaning of fixed assets.—The items included in the numerator under (*a*) above, or Fixed Assets, should meet this test: Are they permanent assets that directly contribute to the output or resale of goods? Such as land used for plant; buildings used for plant; machinery; tools and plant equipment; patterns and drawings; office furniture and fixtures. From the sum of these should be deducted whatever reserves for depreciation are set aside. Care must be taken that such items in assets as would figure as deductions in arriving at the Net Worth of a concern be excluded from the fixed assets. The aim, in making these deductions, is always to bring the measurements of items down to their uninflated value, as nearly as possible. For example, when the term "fixed assets" is used, the meaning of this term should be uniform and should represent actual tangible property, or assets which are directly utilized in the production operations of a business enterprise. The exclusion from fixed assets of property not directly appertaining to the physical production apparatus of a firm, together with the fictitious and intangible items often listed therewith, does not provide, however, against an incorrect valuation of the fixed assets as understood here. The

book value of such fixed assets, even though maintenance charges and depreciation have been provided for, does not always represent their actual worth in terms of either selling price or capitalized income yield, over the period of life of such property. But here, again, we approach a knotty problem that, for the purposes of the credit man, cannot be solved by rule of thumb. Suffice it to say that the investigator must rely on the figures presented in the financial statements, and cannot hope to ascertain, in every case, the actual value of fixed assets by performing a physical valuation. Judgment must be exercised in using the statement of figures, however, for, if there is no evidence of adequate maintenance charges and of provision against depreciation, or if the book value appears inordinately high, then reasonable deduction from the statement figures should be made.

Treatment of holdings in subsidiaries.—A further word needs to be said regarding the advisability of such rigid exclusion of certain kinds of property from fixed assets. In view of the increasing number of corporations in business organizations, the appearance in the assets of items representing security holdings of allied or subsidiary companies is becoming more general than heretofore. The question is: Shall such items be treated as fixed assets? If we have recourse to our previous definition of fixed assets, in this connection, namely, that fixed assets should include only property appertaining to the physical production apparatus of a firm, then, of course, investments in allied or subsidiary companies must be excluded. But contrary opinion might hold that the capital invested for the purpose of controlling enterprises engaged in furnishing raw materials or finished products, or in marketing products produced by the holding firm, or used in any other business necessary to the operations of the parent company, is actually a permanent investment that more or less directly aids the physical production apparatus of the firm. Such a view would include these items under fixed assets, since relinquishing them would seriously handicap the production operations of the holding company, unless some substitute control were effected, such as the outright purchase of allied or subsidiary companies, or the expansion of the parent firm along those lines. The opinion vouchsafed here is that the use of a ratio in which fixed assets have appeared in its computations should

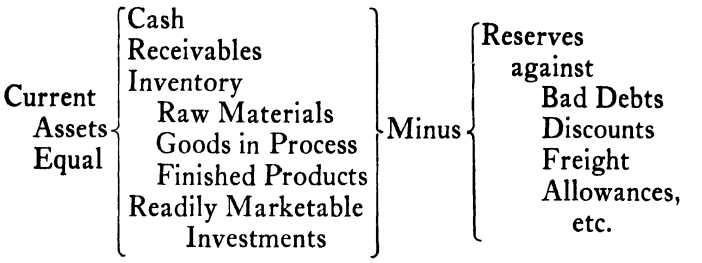
determine whether investments in allied or subsidiary companies should be included under fixed assets. In the ratio of Fixed Assets to Total Capital it might be best to eliminate such investments, as also in the ratio of Net Working Capital to Fixed Assets, but in the ratios of Net Worth to Fixed Investments and Funded Debt to Fixed Investments they might be included. The reasons for such treatment will be made clear in cases analyzed later. It might be well to add that, whenever Fixed Assets are used in the restricted sense, they will be called that in this discussion; but, on the other hand, whenever other items, as investments in allied or subsidiary companies or "other assets," are included, they will be called Fixed Investments, to distinguish them from Fixed Assets proper.

Items included in current assets.—In selecting the items for the numerators in the proportions under (*b*) and (*c*) above, nothing further need be said. The numerator under (*b*)—Current Assets—requires a few observations. Strictly defined, current assets are those which are directly involved in the current operations of a business, such as cash, notes, acceptances, and accounts receivable, inventory (raw materials, goods in process, and finished goods). Under such an interpretation, quick assets—those which are readily marketable, but not necessarily involved in the current operations of a business—must be excluded. However, since quick assets often cover only security investments, such as stocks or bonds which are readily marketable and represent a temporary form of investing surplus, they must, in ratio analysis, be included under current assets. Care should be taken not to include investment items that might be used for sinking fund or reserve requirements; but information concerning these is often unavailable in the statements. Similarly, holdings in allied and subsidiary companies may be disguised as investments, and should be excluded from current assets. Notes and accounts given by officers, stockholders, and employees are also items that would be best left out.[1] A convenient scheme

[1] "American Institute of Accountants Answers to Queries Raised by the Robert Morris Associates Committee.

"Question No. 1.—What distinction, if any, exists between current assets, quick assets, working assets, and liquid assets, which titles are variously used from time to time? Is this merely a looseness owing to the lack of a uniform

for selecting the statement items under current assets is presented in the following:



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title, or when an accountant uses one or another of these titles is it his intention to make a definite distinction of some kind?

"*Answer.*—The terms 'current assets,' 'quick assets' and 'liquid assets' are generally used as almost interchangeable terms, although, strictly, they do not have exactly the same meaning. Current assets have been defined as cash, receivables from outsiders, and inventories of stock in trade, which in the regular course of business will be readily and quickly realized, together with such additional assets as may readily be converted into cash without impairing a business or enterprise (for example, marketable securities other than those held for purposes of control, notes, or accounts receivable from officers, stockholders, or employees). 'Quick assets' is most commonly used in banking circles and includes those current assets which consist of cash or which can and will be quickly converted into cash, for example, inventories and accounts and notes receivable. The balance sheet included in the Federal Reserve *Bulletin* makes just this distinction between current and quick assets. A subtotal of quick assets is made, including inventories, accounts, and notes receivable, and cash, and to this subtotal are then added marketable securities which can be sold without impairing the business and notes and accounts due from officers, stockholders, and employees, the resulting total being described as 'Total current assets.'

"The meaning of 'liquid' assets in practice is the same as 'quick' assets. Regardless of the foregoing distinction, the terms 'quick' and 'liquid' assets are often somewhat loosely applied to the total of the assets described above as current assets.

" 'Working assets' is a term adopted as descriptive of assets intermediate in character between capital and current assets; specifically, assets which are consumed by an enterprise in the activities carried on without themselves forming an integral part of the product, for example, supplies used in operations. In practice it is usual in the case of a manufacturing concern to include the working assets, such as supplies, under the general caption of 'current assets.' "

. . . . . .

"In trust deeds and certificates of incorporation 'current assets' and 'quick assets' are used as alternative terms, and such items as supplies, and also prepaid insurance, etc., are usually specifically included in the general definition of 'current assets' or 'quick assets.' In trust deeds the term 'liquid assets' is used much less frequently than the other two terms."

. . . . . .

The item in assets representing deferred charges, including prepaid expenses, interest, insurance, taxes, etc., should be neglected when computing the current assets. Provision for prepaid current expenses can best be made by deducting them from the accruals under current liabilities, if it is deemed desirable.

Other assets.—The numerator under (*c*) above, entitled "Other Assets," includes a variety of items not covered by Fixed or Current Assets. Under this head the following items should always appear:

Other Assets, the item often contained in statements.

Notes and accounts given by officers, stockholders, and employees.

Securities or investments not readily marketable (including holdings in allied and subsidiary companies).

Deferred charges, except prepaid expenses, which might be deduced from accrued liabilities.

The item of securities or investment might well include holdings in allied and subsidiary concerns, since, as we have seen, these are not placed under Fixed Assets in the three ratios now up for consideration.

Interpretation of ratios.—After having examined the items to be included in the construction of the first three ratios, we shall now proceed to interpret the meaning of each. The Fixed Assets to Total Capital (Net Worth plus Total Debt) ratio measures the proportion of total capital invested in fixed assets of the concern.[2] These assets, as we have seen, repre-

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"*Question No. 2.*—Is it an acceptable accounting practice to certify to a financial statement without having verified with the banks cash balances and obligations outstanding? (One of our members received a certified balance sheet and the following day received a letter from the accountants asking for a verification of the balances and the amount held under discount.)

"*Answer.*—It is not good accounting practice to certify to a financial statement without having verified with the banks the cash balances and obligations outstanding.

"The Federal Reserve *Bulletin* states that 'certificates must be obtained, as of the evening of the closing date, from the banks in which cash is deposited, by or mailed directly to, the auditor himself.' 'Statements must be obtained from all banks and brokers with whom the concern does business, showing all notes and drafts discounted or sold by them for the benefit of the concern.' "

[2] It is convenient to use the term "Total Capital" instead of "Net Worth plus Total Debt."

sent the firm's physical production equipment, which has to do directly with the output or resale of goods. Naturally, when this ratio decreases, let us say, from 49 per cent to 40 per cent, we can infer that the fixed assets consume a smaller amount of capital in the business, relative to the whole, than formerly. An income of the ratio would indicate a reverse condition. In regard to the Current Assets to Total Capital ratio a similar evaluation can be made, which would also be true for the Other Assets to Total Capital ratio. These ratios are purely quantitative expressions of the relative proportion of the total capital invested in a business consumed by each group of assets. It is necessary to consider the above ratios together, since the result to be obtained from these measures represents the uses to which the capital has been put. Any shift of the proportions in favor of "Other Assets" should suggest further inquiry as to whether the firm is becoming engaged in doubtful operations, such as seeking control of other companies, speculation in investments beyond its field of business, unfruitful promotions, accumulation of bad debts, etc. If the tendencies of these ratios give evidence of an increased use of funds for fixed assets, at the expense of working capital or current assets, close analysis should aim to discover whether the firm is tying up too much of its capital in fixed capital purposes, and not allowing sufficient for operating the plant.

Net worth to fixed investments.—There is also a qualitative aspect of the uses made of the capital invested. This qualitative aspect is evidenced by the three ratios remaining to be discussed. The first of these, Net Worth: Fixed Investment ratio

$$\frac{\text{Net Worth}}{\text{Fixed Investments}} \times 100 = \text{Ratio or Percentage}$$

concerns itself with the proportion that owned capital invested in the business bears to the fixed investments. The items that go to make up this ratio, in the case of Net Worth, are similar to those previously mentioned in connection with computing the Net Worth of a concern. Fixed investments, in this ratio, must be given a broader meaning than that ascribed to Fixed Assets, for the primary object of this ratio is to discover the

extent to which owned capital covers long-time investments, namely, those assets that cannot easily be liquidated without injuring or restricting the production operations of the plant. Therefore, fixed investments, as here understood, should include, in addition to the so-called "Fixed Assets" as previously defined, some items formerly grouped under "Other Assets." Thus, in the computation of fixed investments, the following items should be included:

Fixed Investments Equal	Land Used for Plant Buildings Used for Plant Machinery Tools and Plant Equipment Patterns and Drawings Furniture and Fixtures Investments in Allied and Subsidiary Companies Other Assets of a Permanent Nature	Minus	Goodwill and Other Intangible Assets, e.g., Those Deducted to Find Net Worth.

Funded debt to fixed investments.—The second ratio measures the proportion that Fixed Investments bear to Funded Indebtedness. The ratio is expressed thus:

$$\frac{\text{Funded Debt}}{\text{Fixed Investments}} \times 100 = \text{Ratio or Percentage.}$$

The items included under the numerator have been previously listed on page 220, and are, briefly: Mortgages, Bonds, and "Other Long-time Debt." The composition of the denominator has just been described above.

Current assets to net worth.—Lastly, if a more complete analysis is desired, the Current Assets to Net Worth ratio

$$\frac{\text{Current Assets}}{\text{Net Worth}} \times 100 = \text{Ratio or Percentage.}$$

shows to what extent the owned capital covers the gross amount of working capital in the business. Here, again, it is not necessary to repeat the steps in the construction of the quantities that enter into this proportion, since they have been adequately explained in the foregoing pages.

Illustration of meaning of ratios in combination.—Turning now to the meaning of the above ratios, certain significant features must be emphasized. Let us assume the following proportions as evidencing the composition of the assets of a firm in relation to the total capital invested:

	Total Capital		*Fixed Investments*		*Current Assets*		*Other Assets*	
	Amount	*Per Cent*	*Amount*	*Per Cent*	*Amount*	*Per Cent*	*Amount*	*Per Cent*
1st year	$14,112	100.0	$7,008	49.5	$5,296	37.5	$1,808	12.8
2nd year ...	15,005	100.0	6,765	41.1	6,558	43.7	1,682	11.2

The above ratios show that, in the first year, the firm has 49.5 per cent of its total capital tied up in fixed investment, 37.5 per cent in current assets, and about 12.8 per cent in "other" assets, while these proportions in the following year changed as follows: — 8.4 per cent, + 6.2 per cent, and — 1.6 per cent respectively. This would indicate a favorable trend in the firm's credit position, since the firm has reduced the relative amount of capital used for fixed and other purposes and increased its working capital position. Furthermore, the assumption might be made that the Net Worth: Fixed Investments ratio has increased simultaneously from 75 per cent to 82 per cent, that the Fixed Investment: Funded Debt ratio dropped from 186 per cent to 179 per cent, and that the Current Assets: Net Worth ratio rose from 62 per cent to 73 per cent. If the above conclusion is supplemented by interpretation of the trend of these three ratios, as indicated in the above percentages, the final conclusion must be this: that there has occurred an increase in the margin of owned capital over fixed investments, at the same time that the funded debt provides for a greater portion of the fixed investment, and, that, although the current assets are covered relatively less by the owned capital, nevertheless the portion not covered is being taken care of partly by a reduction in investments in other assets, and partly by an increase in current indebtedness, which reduces the fixed interest charges of the concern. Another way of stating these conclusions is that the concern has $1 of owned capital to 82 cents of fixed investments, and in the following year 75 cents; that it had $1.86 and later $1.79 of fixed investments for every $1 of long-time debt, and

$1 of owned capital to 62 cents and later 73 cents of current assets. Although the current assets consumed more of the owned capital than was liberated by the other assets, that is, though the 7 cents less, required for fixed investments, and the quantity freed by "other assets," did not offset the 11 cents additional, required for current assets, nevertheless, the firm is in a far better working capital position, even though current debt had to be increased somewhat. The distribution of the capital from a commercial credit standpoint has bettered itself.

Ratios further compared.—If the conditions to which these ratios point are checked further with the ratios developed in connection with the sources and nature of the capital employed, additional light is thrown on the credit status of the firm. Undoubtedly, the ratios above analyzed may or may not be corroborated by the set of ratios presented in the previous chapter, since the actual figures of the items just considered were roughly these:

	1st Year	*2nd Year*
Net Worth	$8,467 (surplus $2,117)	$9,003 (surplus $2,653)
Funded Debt	3,763	3,763
Current Debt	1,882	2,239

	—*Percentage*—	
	1st Year	*2nd Year*
Therefore, the ratio of Net Worth: Total Debt equals....	150	150
the ratio of Surplus: Net Worth equals.....	25	29
the ratio of Current Debt: Total Debt equals..	33	37

The interpretation of the trend of these additional ratios, representing the sources and nature of the capital used and distributed among the assets as shown by the ratios examined in this chapter, brings out certain definite facts:

1. That earnings have been reinvested in the business and that these account for the increase in net worth.
2. That short-time funds have been borrowed with which to make possible the current expansion.
3. That current borrowing has proportionally increased more than has net worth, although the latter was increased by the reinvestment of earnings.
4. That the proportional increase in net worth was equivalent to that of total indebtedness.

Combining results, the conclusions to be drawn are that the firm's credit worth has improved, in the second year, since:

1. Net Worth has kept pace with Total Debt.
2. Net Worth increased through reinvested earnings.
3. Current Debt provides only a third of all borrowed capital.
4. Net Worth amply covers short-time borrowings.
5. Fixed investments are absorbing proportionally less of the total capital than do other assets, while current assets are absorbing more.
6. Net Worth covers fixed investments in increasing proportion.
7 Funded Debt is not unduly large, though it is increasing relative to fixed investments, because the latter diminished.
8. Net Worth still amply covers the gross working capital with a 27 per cent margin.

Practical ratio analysis of credit cases.—The foregoing theoretical discussion of the principles underlying the use of credit ratios in interpreting the distribution of capital invested among assets will be supplemented in the following pages by a practical application of these principles to the credit cases introduced in the preceding chapter. So far, the subject of discussion has been the analytical ratios dealing with the source and nature of the capital used in these seven concerns. We aim now to develop the meaning of those credit ratios which have to do with the manner in which the capital was invested in the business and the proportions maintained between its various uses.

The reader must refer, throughout the course of the succeeding analysis, to the statements, condensed forms of items, and complete ratios, given in the previous chapter. It is only by following the interpretation through the items in the statements that a clear comprehension can be gained of the method used in credit ratio analysis. It may be desirable, however, to give the tabulation of the sets of ratios upon the following analysis centers. So, at the beginning of each company's case, the ratios dealing with the manner in which the capital was invested will be reproduced.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE DEPARTMENT STORE[a]

Credit Ratios	-Ratios in Percentages- 1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Fixed Assets: Total Capital	14	14	13	8	21	20	19	20	22	19
Current Assets: Total Capital	76	77	79	83	73	74	76	75	73	75
Other Assets: Total Capital	10	9	8	9	6	6	5	5	5	6
Net Worth: Fixed Investments	305	315	348	540	239	232	268	249	239	254
Funded Debt: Fixed Investments	0	0	0	0	0	0	0	0	0	0

Interpretation of combined ratios.—We have seen from the previous analysis of this company, that, during the last four years, it maintained a proportion of about 170 per cent of owned to borrowed capital, meaning that the stockholders contributed $1.70 for every $1 of debt. Nearly two-fifths of the owners' capital was obtained from reinvested earnings, indicating a conservative policy in handling profits. Furthermore, all of the concern's debt was in current form. Our previous conclusion was that the firm did not show a very good position with reference to the source and nature of capital employed, for the debt was rather liberal and obtained on short-time obligations. If the analysis is directed toward the use made of the capital employed in the business, the first pertinent ratio, that of Fixed Assets: Total Capital, indicates that during the last five years a greater proportion of the firm's capital was tied up in fixed assets than was the case in the previous four years. The Current Assets: Total Capital ratio does not show a great variation, which goes to prove that the employment of capital for current operations was not jeopardized. A favorable aspect is given the case by the ratio of Other Assets: Total Capital. The capital used for these assets has fallen and has remained stationary since 1920. The changes in these three ratios of the concern, especially

[a] The ratios of Net Worth: Current Assets, and Net Worth: Current Debt have been omitted throughout the discussions, because it is felt that their use would not be sufficiently productive to run the risk of overwhelming the reader's mind by using too many ratios.

during recent years, do not indicate a weakened condition. Keeping in mind that a department store must find its productive uses of capital largely in current assets rather than in fixed assets, the ratios in recent years do, however, show a tendency toward increasing the fixed investments. But the situation has not become serious. The trend of the ratio of Net Worth: Fixed Investments, which indicates the amount of owned capital left over for working funds, after the permanent assets have been covered, is very uneven. The owner's contributions to working capital are larger up to 1917 than in the subsequent years. Since all of the debt is in current form, it can be seen that, in 1923, the company has $1.54 left over for working capital purposes, after fixed investments have been provided for. This ratio is low when compared with that of 55 department stores, which is 178 per cent for 1923.[4] This is a slightly more favorable showing than was made in 1921 and 1922. The fact that the firm has increased its fixed investments is quite evident, and it is the one weak spot in the store's capital investments. In due time the normal growth in the store's business ought to correct this situation of a little too much investment in permanent assets, and this might happen before the company's indebtedness gets beyond control, although present indications do not point to the latter probability. It must also be emphasized, in this connection, that the store's earnings seem to be ample to take care of the fixed charges against income, occasioned by the debt and growing fixed investments.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE WHOLESALE HARDWARE CONCERN

	-Ratios in Percentages-					
Credit Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Fixed Assets: Total Capital	21	20	22	32	33	30
Current Assets: Total Capital....	84	84	82	75	76	77
Other Assets	0	0	0	0	0	0
Net Worth: Fixed Assets *.....	336	321	248	176	165	156
Funded Debt: Fixed Assets	0	16	12	12	32	45

* In the absence of other permanent assets in the statements, the term "Fixed Assets" is used in the subsequent discussions in place of "Fixed Investments."

[4] *Cf. supra,* p. 183, footnote.

Summary of previous analysis.—The credit ratios previously analyzed indicate that this concern was rapidly increasing its indebtedness. The company was drawing on the surplus rather than increasing it. The limit on current borrowing had evidently been reached, for recourse was had to funded obligations in order to supply sufficient capital. Earnings did not warrant an increase in fixed interest charges. In 1923, the company's ratio of Net Worth: Total Debt dropped seriously, indicating trouble ahead.

Analysis of ratios.—The ratios set forth above, having to do with the manner in which the concern has invested its capital, offer further proof of the continuous weakening of its financial structure. The Fixed Assets: Total Capital ratio increases from 1919 to 1922, with only a slight decrease in 1923. This demonstrates several things: (1) that the firm is tying up more of its capital in fixed assets while at the same time it has trouble in keeping out of debt; and (2) that it is thereby increasing the fixed charges against income. The chief reason, however, for the increase in this ratio is that the firm's surplus is heavily drawn upon, and that the total capital is correspondingly reduced, which reduction is not offset in 1921, and only slightly in 1922 and 1923, by an increase in borrowing or by new stock issues. In view of the declining sales and reduced inventories there is little justification for the increase in fixed assets, especially since this is a wholesale business. The unwholesome effect of this policy seems to have been partially responsible for the drop in the Current Assets: Total Capital ratio. With only a slight increase (2 per cent from 1921 to 1923), it dropped considerably from the level maintained during the first three years. The tendency of these two ratios indicates an unfavorable condition, especially since the firm has experienced such difficulty in maintaining an adequate supply of working capital that it has been led to excessive borrowing.

Untoward tendencies shown.—The relation between Net Worth and Fixed Investments is further evidence that the firm is losing ground. Whereas this proportion stood at 336 per cent in 1918, it was cut more than half—to 156 per cent—by 1923. The ratio for 38 wholesale hardware concerns was 479 per cent in 1923.[5] This is significant, since the firm shows

[5] *Cf. supra*, p. 189, footnote.

only 56 cents of owner's capital available for use in current operations, as compared with $2.36 in 1918. Moreover, it must be remembered that this is a wholesale business in which fixed investments should hold a minor position in the assets. But it is found that they absorb about 61 per cent of the firm's net worth. The increasing amount of funded debt also covers a greater proportion of the fixed assets. In 1918, the firm possessed no long-time debt, but, in 1923, this increased to 45 per cent of the fixed assets. Although it might be assumed that these funded obligations provide nearly half of the fixed investments, and thus liberate the owners' capital for working funds, the other proportions previously analyzed show that this method of financing seems to be a measure of last resort. Neither the earnings nor the sales warrant the covering of fixed assets by funded obligations. Indeed, there is nothing to be gleaned from the analysis of these ratios that will offset the conclusions already reached in connection with the earlier three ratios.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE WHOLESALE GROCERY CONCERN

	-Ratios in Percentages-					
Credit Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Fixed Assets: Total Capital....	13	13	14	17	18	19
Current Assets: Total Capital..	84	88	87	82	81	81
Other Assets: Total Capital....	.3	.03	.04	.9	.9	.8
Net Worth: Fixed Assets *.....	440	452	402	358	347	359
Funded Debt: Fixed Assets.....	4	5	28	5	2	0

* Since the "Other Assets" are so small, no attempt is made to include them in the ratios of this company.

Repetition of former conclusions.—On the basis of the three preceding ratios, this company was rated as very good. The stockholders' investment increased more rapidly than the debt, even though the Surplus account did not show a large increase. The debt, which, as we have seen, is amply covered by owned capital, exists entirely in current form in 1923, the Income account being thereby freed of fixed interest charges. This current debt creates no unseemly burden upon the concern. The source and nature of the capital employed indicated a wholesome condition for a wholesale grocery business.

Ratios show well balanced capital uses.—The uses made of this wholesome supply of capital are kept within conserva-

tive and well balanced proportions. The tendency is present, however, to tie up more of the capital in fixed assets. It seems that even the best managed enterprises yielded to the temptation of expansion during the boom period prevailing from 1918 to 1920, and remained under the spell of optimism in the succeeding years up to 1923. Other studies clearly indicate that expansion has been a universal disease of business enterprise during these past years. The corollary of fixed expansion is invariably the same, namely, a smaller proportion of capital used for current operations. This concern, therefore, also evidences a decrease of the ratio of Current Assets: Total Debt, during the period, while its investments in other assets is almost negligible. The increase in the employment of capital for fixed expansion and the decrease in that for current operations cannot be construed as of great import to the financial structure of this company. Both sales and earnings seem to justify this policy.

With reference to the trend of the concern's margin of net worth available for working capital purposes after the fixed assets have been provided for, a considerable decline is noticed, with a slight betterment in 1923. The drop in worth from $3.40 in 1918 to $2.47 in 1922, for every $1 of fixed assets, can be ascribed only to the great increase in fixed assets, since the worth increased consistently during the entire period. In comparison with the combined ratio of 108 wholesale grocers, which was 285 per cent in 1923, this company possesses a considerable margin.[6] It seems that the reason for the drop above indicated, in view of the proportion for the 108 companies, was, perhaps, due to the extreme conservatism of the firm in the earlier years of this period. Since it has wiped out its funded debt, the final ratio need not be considered. In conclusion, this company has still preserved a well balanced financial structure. The distribution of the capital among the assets, although tending to flow more into fixed investments and less into current, predicates no weakened condition, since the wide margin of owner's capital is a sufficient safeguard for a good credit risk.

[6] *Cf. supra,* p. 195, footnote.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE SHOE MANUFACTURING CONCERN

Credit Ratios:	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
	-Ratios in Percentages-					
Fixed Assets: Total Capital.....	10	8	7	10	10	10
Current Assets: Total Capital....	93	96	94	91	93	89
Other Assets: Total Capital.....	3	.3	1	3	3	1
Net Worth: Fixed Investments...	375	624	534	498	504	581
Funded Debt: Fixed Investments	1.3	0	0	0	0	0

Fair position from selecting capital sources.—The analytical ratios regarding source and nature of capital employed by this concern pointed to the conclusion that it stood only in a fair position. It had been operating since 1921 on an increasing debt, although this debt was considerably lower than that which existed previous to 1921. The company impaired its surplus in the more recent years, and its borrowings consisted primarily of current obligations. The position of the firm, however, is by no means serious. Remedial measures could be easily employed if the firm desired. Its sales are good and no excessive expansion is evident.

Peculiarities of fixed assets.—Attention has been called to the fact that the shoe industry shows no large fixed assets, as a rule, since the practice of leasing machinery necessitates an investment only in land and building. This is evident from the ratio of Fixed Assets: Total Capital of this company. As a matter of fact, no significant change is discernible. A similar situation prevails in reference to the ratios of Current Assets and Other Assets to Total Capital, although there seems cause for the decline in the former. This reason is to be found in the disappearance, in 1923, of the rather high reserves carried in previous years. And since this item has been omitted in deriving the item of Total Capital, the decline in the Current Asset: Total Capital ratio to 89 per cent, in 1923, has merely a mathematical significance.

Analysis of ratio of net worth to fixed investments.—In turning to the trend of the Net Worth: Fixed Investments ratio, increasingly favorable conditions become evident. The company has at all times carried a high margin of net worth over fixed investments. The depression of 1921 left its impression on the course of this proportion, but the firm has subsequently worked itself into an exceedingly strong position.

The ratio of 263 per cent, representing the combined condition of 38 boot and shoe manufacturers, falls considerably beneath the ratio of this firm.[7] The increase in the ratio is to be ascribed primarily to the increase in net worth. Land and buildings, housing the leased machinery, were items that changed little, except in 1923, when an increase of $200,000 occurred. The impression must not be gained, however, that this large excess of worth over fixed investments is evidence of sheer financial strength. The firm must meet all the ordinary expenses of a manufacturing business, and, in addition, it must meet the rentals for the machinery used. Besides, it can readily be seen that this firm does not possess the equivalent in assets of that of another concern which owns all of its machinery. It follows, then, that the shoe manufacturer has a more restricted basis for borrowing. Underlying its credit transactions is the property owned by the company. Nevertheless, this company shows a good capital distribution, if the nature of its business is taken into account. It might be reasonable, perhaps, to modify the statement "a fair position" to read "a good position," in the light of the ratios just analyzed.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE SILK MANUFACTURING CONCERN

	-Ratios in Percentages-								
Credit Ratios	*1918*	*1919*	*1920*	*—1921—*		*—1922—*		*—1923—*	
				7/2	12/31	7/1	12/31	6/30	12/31
Fixed Assets: Total Capital	49	35	42	37	29	46	40	50	45
Current Assets: Total Capital..	51	65	58	63	71	54	60	50	52
Other Assets: Total Capital..	0	0	0	0	0	0	0	0	0
Net Worth: Fixed Assets	162	211	200	205	224	167	180	139	141
Funded Debt: Fixed Assets ..	0	0	0	0	7.6	3.8	3.8	36	36

Summary of previous conclusions.—The type of capital employed by the silk manufacturing concern was undergoing a remarkable change in 1923. It was discovered that, prior to 1923, the firm relied chiefly on profits, new stock issues,

[7] *Cf. supra*, p. 200, footnote.

and current borrowing for its increasing capital requirements. In the last year, however, this traditional policy was cast aside and the company turned to long-term obligations. This seems to have been a matter of necessity rather than a voluntary change of financial policy. The evidence for this must be deferred until the following chapters. At any rate, the information derived from the three ratios pointed to a still sound, but somewhat weakened, financial condition.

Interpretation of first two ratios.—This manufacturing firm, if contrasted with the shoe company, represents a more or less typical manufacturing business. Its fixed assets loom larger than those in the statement of the above shoe concern. We find, therefore, that the Fixed Assets: Total Capital ratio is considerably higher. This particular ratio of the silk firm fluctuates erratically. The reasons seem to lie in the great variation of the net worth. However, the statement indicates a recession in the amount of fixed assets, in the years 1919, 1920, and 1921. That the firm was severely tried is also evident from the decline in the net worth during 1920. In this year the reduction in total capital can be attributed to the liquidation of the concern's inventory with a corresponding reduction in net worth and in current debt in 1920. The trend of this ratio indicates that, in 1923, half of the company's capital is invested in fixed assets—a proportion already attained in 1918 and in the first half of 1922. The amount of capital available for current operations is, therefore, lower in 1923 than the average amount for the preceding years. It is evident from a comparative study of these two ratios that the firm is allocating more capital to plant purposes and less to working funds.

Changes in capital uses.—Akin to this situation is that manifested by the Net Worth: Fixed Assets ratio. The consistent improvement in the margins available for working funds until the middle of 1921 gave way to a much smaller figure by the end of 1923. In fact, the average for the year is considerably lower than that maintained at any time since 1918. This encroaching of fixed assets on the net worth seems to have necessitated the increase in funded debt. More permanent capital was required to bolster up the declining volume of funds available for current operations. It must be observed, however, that this method of financing was not

only a radical departure from the firm's established policy, but that the company faced difficulties which compelled bringing long-time funds into the business. There is nothing inherently bad about the financial structure presented by the firm at the close of 1923. It does not possess so strong and well balanced a business as that which obtained prior to 1922, for weakening influences crept in, in the shape of increased debt, increased fixed investment, and a reduced supply of available working funds. A more conservative expansion policy would greatly strengthen the financial position of this company.

NATURE AND PROPORTIONS OF CAPITAL INVESTMENTS BY THE SPECIALTY METAL MANUFACTURING CONCERNS

Co. 1

Credit Ratios:	*Ratios in Percentages*					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Fixed Assets: Total Capital.....	45	40	45	43	47	48
Current Assets: Total Capital....	55	60	55	57	53	52
Other Assets: Total Capital.....	0	0	0	0	0	0
Net Worth: Fixed Assets.....	122	144	142	154	150	154
Funded Debt: Fixed Assets.....	38	30	21	13	6	0

Co. 2

Credit Ratios:	*Ratios in Percentages*					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Fixed Assets: Total Capital.....	37	29	31	38	44	48
Current Assets: Total Capital....	63	71	69	62	56	52
Other Assets: Total Capital.....	0	0	0	0	0	0
Net Worth: Fixed Assets.....	135	156	141	115	104	83
Funded Debt: Fixed Assets.....	49	61	67	67	58	61

Recapitulation.—The comparison of these companies, in the previous chapter, on the basis of the three credit ratios, netted the following results: Co. 1 gave an excellent account of itself. The owners increased their capital tremendously by reinvesting earnings and by new stock subscriptions. The funded debt was wiped out by 1923. The company was working rapidly into an independent financial position. Co. 2, on the other hand, managed its financial sources badly. The owners were giving way to the creditors. It relied on borrowed funds to the point of danger. The tendency seemed to be one of drifting toward financial rocks.

Comparative analysis of ratios of two companies.—A further consideration of the ratios related to the use made

of the capital obtained by these concerns will yield additional information regarding their respective financial structures. The ratios of Fixed Assets: Total Capital, and of Current Assets: Total Capital of Co. 1 indicate a sporadic trend, up to 1920. Thereafter, the proportion of capital invested in fixed assets increases, while that invested in current assets decreases. This divergent trend of the two ratios is slight, however, and no great significance can be imputed to it. The firm is growing gradually, with perhaps an increasing efficiency in the use of invested capital, especially in the management of working capital. Such a condition would, of itself, induce such a trend in these relations, and it cannot be regarded, therefore, as unwholesome. The Net Worth: Fixed Assets ratio shows a favorable trend with the exception of a mild recession in 1922. The firm is keeping the excess of owned capital intact (after providing for the fixed assets), for current operations. This is an especially excellent sign of sound financial management, since the firm is able to do this and at the same time progressively to retire the funded obligations, leaving, thereby, a current debt of only moderate proportions and an increasing supply of owners' capital. These ratios must be regarded as supplementing those heretofore analyzed and further corroborating the former conclusion that the firm is in an excellent financial position.

In comparison, Co. 2 offers a very poor performance. Its ratios of Fixed Assets: Total Capital, and of Current Assets: Total Capital, however, show exactly the same relation in 1923 as do those of Co. 1, although the ratios of Co. 2 developed that position with greater rapidity since 1919. But the differences with respect to these ratios give no clue to the difficulties that are developing for Co. 2, in the uses of capital. The ratio of Net Worth: Fixed Assets uncovers the financial quicksand. The trend of the ratio was rapidly downward throughout the period, and in 1923, it sinks below parity. So Co. 2 finds all of its owned capital sunk into fixed assets and, what is worse, it must borrow 17 cents to cover every $1 of fixed assets. This means that the company actually borrows all its working capital. The rather high proportion of funded debt to fixed assets is only further proof that the company must borrow heavily. Of course, as previously alleged, if its earnings continue favorable, Co. 2 might be able to go along

with this overburdening debt, but the financial future looks rather hopeless unless more stockholders' contributions are forthcoming. An increasing cautiousness on the part of the creditors, rising costs, or a falling demand for this firm's products may easily bring on the final reckoning.

Recapitulation.—

A. Department Store—Ratios show too great use of capital for fixed assets.
B. Wholesale Hardware—Ratios indicate a badly unbalanced financial structure.
C. Wholesale Grocery—Ratios demonstrate a harmonious financial relationship.
D. Shoe Manufacturing—Ratios show a good use of a somewhat poorly obtained capital.
E. Silk Manufacturing—Ratios evidence a condition of over-expansion.
F. Co. 1 Specialty Metal Mfg.—Ratios illustrate an excellent capital investment.
G. Co. 2 Specialty Metal Mfg.—Ratios illustrate a very poor capital investment.

References.

Bliss, "Financial and Operating Ratios in Management," Chapters xxii, xxxvii.
Wall, "Analytical Credits," pp. 150-153.

Chapter IX

CREDIT RATIO ANALYSIS OF THE THIRD FACTOR IN CREDIT; THE SUPPLY AND POSITION OF WORKING CAPITAL

Significance of factor.—From the standpoint of commercial credit, the amount and control of working capital is a highly significant consideration when determining the credit worth of a concern. So important, in fact, is this aspect of capital investment and management, that credit investigations have always concentrated their chief attention upon it, and still do. In addition to the following treatment of this third credit problem, it will be necessary to devote an entire chapter to the principles that underlie the management of working capital, in order to give the credit student a clearer comprehension of the ratio analysis developed in this chapter, and also to lay the basis for a thorough understanding of the problem of estimating working capital requirements for a business concern, and of forecasting other factors in budgetary control.

Elements in problem.—The problem in analyzing the credit aspect of the amount and control of working capital presents four phases:

1. The amount of working capital invested in current assets and the relation that this amount bears to the amount of the current or short-time obligations incurred.
2. The amount of net working capital in the business as compared with the size of the fixed assets.
3. The rate of turnover of the working capital as a whole, as well as that of the more important elements in which the greater portion is invested, namely, receivables and merchandise, and the relationship between receivables and merchandise, in the composition of the current assets.
4. The degree of control that is, and can be, exercised in supplying the business with an adequate and efficient amount of working funds *continuously*.

Differences in working capital requirements.—To appreciate fully the implications contained in the above four points, the relation between the quantitative and the qualitative elements in a firm's working capital position must be carefully considered. We wish to reiterate here what has been said in the previous chapter concerning the inefficacy of applying general "standards" or "averages" as practical tests in measuring the financial and investment proportions maintained by individual enterprises. The same may be said as to the requirements and control of working capital, which are most dissimilar for individual business firms—nothing definite can be gleaned from the vague and general financial and operating "standards" constructed from the "averages" of many concerns. These may, perhaps, exist as mental reservations in the mind of the credit man—reservations which are necessarily present in every exercise of judgment on a credit risk—and they may play a part in the basis of figure-facts on which credit decisions rest. But a glance at the following list of factors that make for a wide difference in the requirements and management of working capital as between any two industries or individual enterprises will make clear the fallacy of attempting to apply rigid standards or averages to particular cases:

1. Nature of goods dealt in—type of industry.
2. Extracting, manufacturing, wholesaling, or retailing concern.
3. Location of firm in relation to the markets in which it buys and sells.
4. Financial connections.
5. Integration and agreements with other enterprises.
6. Relative stability or instability of demand.
7. Turnover of merchandising firms.
8. Manufacturing period of manufacturing firms.
9. Terms of sale and purchase.
10. Potential and actual competition.

Relation between volume and turnover of working capital.—Clearly, then, in view of the disparity of conditions under which the individual enterprises operate, recourse must be had to the trend of the proportions exhibited by each firm, as they are related to the present problem. We come back, at this point, to the relation between the quantitative and

qualitative aspects of working capital, as the acknowledged bases of the credit ratios to be developed, meaning that the safe and profitable supply of working capital for any enterprise, both gross and net, considered in relation either to current liabilities or to fixed assets, can be intelligently judged only in connection with the turnover rate of that supply. The turnover rate is the qualitative aspect and is the variable element to be taken into account when the adequacy of supply of working capital is to be judged. Finally, when the factors above enumerated have been analyzed individually to ascertain their influence on the requirements and control of working capital, they are directed altogether toward determining, if possible, the working capital turnover for any individual firm. In other words, differences in working capital requirements can, in the final analysis, be translated into differences in rates of turnover. A relatively large supply of working capital usually denotes a low rate of turnover, as characteristic of the industry; while, on the other hand, a relatively smaller supply often indicates a high turnover rate. Of course it is assumed that such supply is considered also in relation to the volume of business, size of current debt, or amount of fixed assets.

Meaning of turnover.—By turnover we mean the velocity attained by the typical dollar represented in working capital, in passing from cash to goods, then to receivables, and back to cash. By rate of turnover we mean the number of times within a given period, say a half-year or a year, that the "average" dollar of working capital makes a complete circuit: cash—merchandise—receivables—cash. The term "average dollar of working capital" is used to indicate the actual condition that exists with reference to the operation of the working capital fund in an establishment. That is, some dollars might be dammed up for a time by specific lots of unmarketable merchandise, by several bad-debt items in receivables, by a certain residual amount of cash which it is always necessary to keep on hand, or by the cash balance kept in a bank, as the 20 per cent requirement on deposits resulting from loans or discounts. Other particular dollars might be more active, since they represent marketable merchandise, liquid receivables, and unhampered cash. So the meaning here to be taken is that the "average dollar" is typical of all

the dollars making up the working capital fund, which are more or less passive or active. Now the number of "average dollars" is, therefore, equal to the total supply of working capital possessed by an enterprise at any time. But, if we wish to compute the rate of turnover, which is always a time and intensity unit, a different average confronts us, since we must reckon with the average amount of working capital possessed by a concern over a period for which the rate is to be found. Such an average amount is equal to the sum of the amounts on hand, let us say, at the end of each month for a year, divided by 12. This figure would represent the average monthly amount of working capital for the year and, at the same time, consist of the "average" or "type" dollar, not any particular dollar. So when this figure is divided into the total annual net sales of a firm, the result will give the rate of turnover or the number of times the "average dollar" made the circuit—from cash to merchandise—to receivables—back to cash. Thus, we see that the "averages" here used are not incongruous and the definitions above given ought to make clear to the reader that when we speak of an "average dollar" of working capital it is an abstract dollar, but, nevertheless, of practical significance, if we seek to understand the nature of turnover.

Management a factor in working capital requirements.—In addition to the differences that exist between industries and particular concerns as to the requirements in working capital, individual enterprises in similar industries may differ in such requirements. If such is the case, much of the responsibility rests with the differential rate of turnover of working capital. Should the rate vary greatly in similar firms, the cause might be looked for in the difference in financial management. In case the requirements of working capital should change for a specific concern during a given period, and the reasons for the change are not evident on the surface, more detailed analysis will usually disclose that they originate in the changes in rate of turnover. The practical significance of this test and the necessity for correlating the amount with the turnover of working funds invested in a business will be made clear in the cases analyzed.

Credit ratios and measures of working capital requirements and control.—Many ratios are possible of construc-

tion from these items in financial statements which have to do with the credit factor under consideration. But, as indicated in the four significant points outlined above, certain aspects of this factor contain the information desired in credit investigation. These are: the quantity of working capital relative to current debt and fixed assets, and the quality of working assets, as evidenced by the composition and turnover of these assets—turnover, as regards both the whole supply of working capital, and its principal separate parts—receivables and merchandise. We shall begin with the computation and interpretation of the first credit ratio, which has to do with the relation between the total of current assets and the total of current liabilities. This is the familiar "2 to 1," or current ratio. It is expressed thus:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} \times 100 = \text{Ratio or Percentage.}$$

In its construction the following scheme may be helpful:

Current Assets	Cash Receivables Merchandise Quick Assets: Investments	Minus	Provisions for: 1. Bad debts. 2. Cash discounts or trade discounts. 3. Freight. 4. Allowances, etc.
Current Liabilities	Payables: Accounts Notes Acceptances Accruals: Wages Interest Taxes Insurance etc. Reserves — for taxes	Exclude	Reserves — for above deductions from current assets.

Interpretation of the current ratio.—To dwell further on the calculation of the items that make up the numerator and the denominator of this ratio would be to duplicate what has already been said in the two preceding chapters. We will pass on, therefore, to the interpretation of the current ratio. Briefly, this ratio is a measure of the surplus of current assets over current liabilities. If this ratio equals 200 per cent, it means there are $2 of current assets in the business for every $1 of current liabilities. The margin or surplus would therefore equal $1. The theoretical interpretation of the current ratio is that current assets are liable to shrink in value, while current liabilities always remain irreducible, except by paying them off with cash. Thus, the business enterprise is confronted with a shrinkable current asset dollar, with which to pay off a nonshrinkable current liability dollar. The possible reduction in the number of dollars representing current assets occurs, primarily, in those invested in receivables, merchandise, and investments. Bad debts may reduce working capital represented by receivables. Unmarketable merchandise or declining prices will have similar effects, as would investments in securities, etc., if they must be sold in a declining market in order to obtain cash. On the other hand, the volume of current liabilities existing from time to time is subject to no influences that reduce it except payment. Following this line of reasoning, we may assume that the quantity of current assets in relation to current liabilities evidences the degree to which working capital may be reduced through losses, or otherwise, before jeopardizing the means with which current debt must be met. This margin of safety, so to speak, is supposedly equivalent to the excess of current assets over current liabilities.

Determining the value of current assets and current liabilities.—When determining the quantity of current liabilities, or their value in terms of price, no problem of inventorying is present, for the items representing current obligations are in themselves definite unchangeable amounts.[1] With reference

[1] American Institute of Accountants Answers to Queries Raised by the Robert Morris Associates Committee offers some elucidating information regarding liability items.

"*Question No. 3.*—Is it sufficient to verify only with the banks that, according to the records, hold obligations at the date of the statement, or should a

to current assets, however, the problem is not so easy. Outside of cash, every item has undergone a process of valuation before being entered in the balance sheet. Investments such as securities might be valued at their original purchase price, or marked up according to their subsequent appreciation, or they might be entered at their current market value, as nearly as that can be determined. Receivables may be regarded as not subject, as a general rule, to a changing market value. Their original value, for practical purposes, is the appropriate one. It is true that the market rate of discount varies and with it the rediscountable value of receivables, but this question is of little concern to ratio analysis. Moreover, the size

verification be made with all banks (and commercial paper brokers as well, if their services have been availed of) where obligations may have been held at any time, say during the previous twelve months or such other time limit as you may set?

"*Answer.*—It is usually considered necessary to communicate only with the banks shown by the records to hold the obligations of the company at the date as of which the verification is to be made. In the verification of notes payable to banks, the best practice is for the auditor to communicate with all of the banks or brokers with whom the concern has done business some time prior to the date of the balance sheet; in the case of an annual audit, for a full year. Frequently, however, only the banks holding obligations as at the close of the year are written to, the justification for this practice being that it is manifestly impossible to cover by correspondence all of the banks from which a concern might have borrowed money.

"In connection with the verification of notes payable, the auditor should see all notes which have been paid during the period under audit to ascertain that they have been canceled, and, further, he should examine the interest paid account, which might disclose the payment of interest on any obligations not shown on the books.

"*Question No. 4.*—Is an accountant obligated to mention any assets that are hypothecated (with the exception of mortgaged real estate and plant), and any liabilities that are specifically secured? In answering this question consideration should be given to the possibility of a mortgage covering other than plant (should he comment on this?), or to a collateral trust note issue, collateraled with securities owned by the corporation. (The Federal Reserve *Bulletin* article comments on the necessity of noting any assets that have been hypothecated as collateral for loans, but we would like to have a specific ruling upon the subject in its broader aspect as noted in the question.)

"*Answer.*—In the balance sheet of a concern where any of the assets are hypothecated, notice thereof should be given on the balance sheet. In cases where any of the current assets are pledged or hypothecated, it is customary to make a very specific reference to the items either in the description of the asset items or in the description of the liability item in respect of which the assets are hypothecated.

"In the case of mortgage bonds or collateral trust notes, it is not customary to give in the balance sheet full particulars of the property which is pledged

of the receivables item is affected by bad-debt losses, but here, again, beyond deducting the provisions made for bad debt, or, if none are made, deducting an amount equivalent to the normal bad-debt losses to be expected in a particular line of business, from the total amount of receivables, may be considered a conservative basis on which to estimate the actual amount of receivables to be used in constructing the current ratio.

Valuation of inventory.—The item of merchandise, in contrast, presents a more difficult problem of valuation, owing to its magnitude. For purposes of credit analysis, it is difficult to go beyond the statement figures representing the amount of merchandise inventory. For to do so would entail

as security for those liabilities. The fact that a mortgage exists or collateral trust notes are outstanding puts on notice any person extending credit to the company. In the case of mortgage bonds, while it is true that they are usually secured specifically only upon fixed assets, deficiency judgments can be obtained which give them a claim upon the remaining assets of the borrowing company.

"*Question No. 5.*—Is an accountant obligated to mention any unpaid accumulative dividends? In answering this question please have in mind as possibly affecting your decision the different provisions that sometimes exist in connection with a preferred stock issue, to the effect that unpaid dividends for a specified time entitles the preferred stockholders to equal voting power with the common stockholders, etc.

"*Answer.*—In the accounts of a company where there are unpaid cumulative dividends, this fact should be noted on the balance sheet prepared for the information of stockholders. As a general rule, the only interested parties are the holders of the stock in respect of which the dividends are in arrears and the holders of securities junior to that issue. In the case of a balance sheet which is issued only for the specific purpose of obtaining credit, the omission of the reference to arrears of dividend may be permissible, but in the annual report of a company such arrears should be noted on the face of the balance sheet.

"*Question No. 6.*—Where there is a liability for taxes is the accountant obligated to set this up or else comment on it in his certificate? If he sets it up is it sufficient to bulk the amount in with a general item of reserves, where there is no comment as to what this item refers? If it is not set up as a reserve, but rather referred to in the certificate, is it sufficient merely to state that no reserve has been set up for Federal Taxes, or should there be an additional comment as to the estimated amount of these taxes?

"*Answer.*—Where there is a known liability for taxes, this liability should be set up in the accounts of a company or the accountant's certificate should be qualified. If it is taken up in the accounts of a company, it should be included in the current liabilities, but no objection can be taken to the grouping of the item with other liabilities, although it is usual in cases where the item is included with other liabilities to indicate in the phraseology that it has been taken up. It is quite conceivable that a company from perfectly proper motives might not wish to disclose the amount of its profits, and if the

a great number of obstacles. If the balance sheet figures are supplemented by a statement indicating the basis used for fixing the value of merchandise inventory, then an adjustment of the merchandise items can be made in accordance with the judgment of the credit analyst. Such a basis for the valuation of inventory may include:

1. Cost prices—of specific items or average costs.
2. Selling prices of merchandise.
3. Replacement costs—costs in current market.
4. Cost plus normal profit.

Credit significance of paper profits.—The best principle to be followed in estimating the value of the merchandise

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item of Federal income tax were shown separately, the amount of the profits could probably be deduced from the amount of the liability.

"If the amount is not taken up in the accounts as a liability, the fact should be referred to in the certificate of the accountant. Only under very unusual circumstances would the tax liability be omitted from the books of a company where it could be definitely determined, but if the accountant has shown that such liability has been omitted from the books, he cannot insist upon the amount being disclosed. However, the mere fact that the accountant's certificate states that no provision has been made in respect of Federal taxes puts on notice all parties who are interested in the financial statement of the company and they are then in a position to make any inquiry they desire of the company.

"*Question No. 7.*—May it be taken for granted in accepting a certified statement that the accountant has inquired as to the examination of the books by the Internal Revenue Department, and has ascertained that there is no apparent liability for back taxes, or otherwise that such liability would be commented upon?

"*Answer.*—The last question should be answered in the affirmative, that is, where an accountant has certified a statement it can be taken for granted that he has made full inquiry into the tax situation of his client, and if there is any liability for back taxes or a probability, in the accountant's opinion, of additional taxes as a result of an examination by the Internal Revenue Department, a provision should either be taken up in the accounts or the omission should be noted in the accountant's certificate.

"Even in cases where no examination has been made by the Internal Revenue Department and the accountant is of the opinion that a liability exists for additional Federal taxes, which liability is not provided for in the accounts, his certificate should contain a qualifying clause. On the other hand, it is quite possible that the Government might have claimed a liability for additional taxes which the accountant might know to be erroneous, in which case he would be justified in assuming the responsibility for omitting any reference to the Government's position.

"Committee on Co-operation with Bankers,
"WM. B. CAMPBELL,
"Chairman."

item, when computing the amount of current assets, is to attempt to bring the book value into line as nearly as possible first with the cost, and then with the selling price of the merchandise. If this principle is consistently followed, profits also will be accurately reflected in the trend of the current ratio. The result of inventorying merchandise on any other basis of valuation than that of actual cost is the appearance of paper profits in working assets, before they are really made in dollars and cents. Such a process of valuation may be permissible from a credit man's standpoint, provided business is progressing in the phases of revival and prosperity. But, as business activity passes into the phase known as cumulation of prosperity, the use of any other basis than that of actual cost is fraught with serious danger. In periods of declining prices—in the phases of liquidation, crisis, and depression—this very basis of costs becomes dangerous to use, and the basis of inventory valuation now becomes the more safe the nearer it approaches actual selling prices; since, in these times, as a rule, merchandise is marketed below cost, in order to liquidate obligations and to avoid undue losses by holding over stocks of goods. So we see that it is almost impossible to lay down a general rule to govern the credit analyst in judging a correct inventory valuation. *The basis upon which the credit worth of a concern is judged should not include paper profits, for this is the very factor that is to be estimated in a credit risk.* As in many quests, the ideal is never attainable in credit analysis. Often, the statement figures representing the value of the merchandise inventory must suffice, in view of the lack of any other information. But the credit man must judge each case on its own merits. The scheme submitted below might serve the credit analyst as a beginning, in shaping up his figures on merchandise, when calculating the volume of current assets:

Phases of Business Cycles.—

Revival—Actual Cost.—Prosperity cannot be assured and profits are still small. Although advance ordering is being done, overstocks are low or nonexisting. For these reasons actual cost should be the basis of inventory valuation.

Prosperity—Actual Cost.—Prosperity in full swing required restraints against overbuying and undue stimulation of business activity and speculation. Credit should not be based on paper profits, for these profits should be sought and estimated in a credit risk.

Cumulation of Prosperity—Actual Cost.—Extraordinary optimism, built upon fictitious paper profits, accelerates prosperity. This is a period when extreme caution should be exercised by the credit man. High inventories are sufficiently detrimental, without inflating the basis of valuation. The impulse to borrow is at its height.

Liquidation and Crisis—Selling Price.—After the boom has broken, when liquidation is under way, and falling prices are the rule, selling prices generally fall below costs of inventories.

Depression—Replacement Costs.—Some concerns still make profits, especially those that exercised caution in buying during the boom and that sell lines of commodities whose prices remain fairly steady. Such concerns need to revaluate inventories. Stocks in some industries cannot be sold at all, but being standard, nonperishable articles must be held over until the latter part of depression, or until revival. These stocks need to be constantly revalued on the basis of their competitive worth, since competition is severe in these times.

No definite formula possible as basis for inventory valuation.—There is no definite formula sufficiently flexible to accommodate itself to the various phases of the business cycle, by which a fairly correct basis for inventory valuation may be arrived at. Such guides and principles as have been outlined in Chapter IV of this book may be considered as essential substitutes, and the rest must be left largely to the judgment of the credit man. When the inventory item comes up for consideration in the computation of the amount of current assets, the facts as to the valuation must be obtained before any deviation from the statement valuation can properly be made. When, however, this information is at hand as to the method used in valuation, the inventory figure can then be adjusted

to meet sound credit practices. Even though such an adjustment seems entirely desirable, it may happen that the practical question (Just what percentage should be deducted from the statement figures, and just how to remain consistent in these adjustments so as not to influence arbitrarily the trend of the ratios in which the inventory item figures, unless the credit investigator informs himself as to the actual cost or selling prices of the goods, or obtains the per cent of normal profit added to costs—if that be the method of inventory valuation employed—or determines the basis of the replacement costs?) must remain unanswered. For practical purposes, however, it seems as if adjustment of the inventory valuations presented in financial statements should not be employed, except in cases where it is specially desirable, for establishing an exact basis of facts would be not only too costly, but also too burdensome, for a credit department to attempt. Outside of such corrections as previously described, the credit man must bide the time when business firms will of themselves adopt conservative methods in inventory valuation, and vary their method to the varying marketing conditions prevailing at different stages of the business cycle.

Merchandise inventory and credit ratios.—The continuation of our analyses will clearly demonstrate that the question of inventory valuation does not seriously impair the usefulness of credit ratios in which the item of merchandise has entered for valuation. Invariably credit weakness, resulting from a policy of inflating inventory valuation, will come to the fore in ratio analysis, and, therefore, can be discounted. For the influence of the business cycle is plainly evident in the trend of the various credit ratios of nearly every business concern. An alert credit man can easily detect, therefore, an overinventoried condition, toward the end of a period of prosperity, although he might not be able from the financial statements to discern the causes for the overinventoried condition —that is, whether it is due to an increased valuation or to an increased quantity of goods purchased. As regards these causes, some indirect evidence can be obtained by analyzing the growth of bills and accounts payable as well as the growth of other sources of capital added to the business, such as long-time borrowing, new stock issues, and earnings reinvested. For, if merchandise is increased merely by writing up

its inventory price, no increases would be noticeable in these liability items, unless other avenues of investment had absorbed additional capital.

Valuation of investments and receivables.—Sufficient has been said to disclose the influence of inventory valuation on the trend of the current ratio. There is a similar problem concerning the investments of a liquid nature, but these never bulk large in current assets. As regards the amount of receivables, several factors must be recognized as exerting an influence on the trend of the current ratio outside the direct changes in amounts due to increase in sales. These are:

1. Changes in terms of sale: if net terms are lengthened, the receivables will tend to increase; if shortened, they will tend to decrease.
2. Changes in cash discounts: if increased they may stimulate borrowing from banks; if lowered, the effect will be the opposite.
3. Progress of collections, even though terms of sale remain the same.
4. Practice of renewing receivables will naturally tend to increase receivables.

Variations in cash.—Finally, the item "cash" may also influence the trend of the current ratio. This factor originates in the dividend policy pursued by the firm. If profits are paid out in the form of dividends, a corresponding reduction in the cash item may be expected, periodically. On the other hand, if part or all of the earnings are reinvested in the business, the effect on the current ratio might be twofold: (*a*) if added to the amount of working capital—that is, invested in current assets—then the margin of current assets over current liabilities should tend to increase; and (*b*) if reinvested and withdrawn for purposes of fixed capital expenditures, then the current ratio would not be affected. In this connection, cash might also be reduced through sinking fund requirements, and through promotion expenditures, the latter not necessarily being reflected in the current or fixed assets as defined for the purpose of computing credit ratios.

Meaning of ratio of net working capital to fixed assets.—The second ratio, under the third general credit factor, is

the ratio of Net Working Capital to Fixed Assets and is expressed by this proportion:

$$\frac{\text{Net Working Capital}}{\text{Fixed Assets}} \times 100 = \text{Ratio or Percentage.}$$

The explanation for selecting the items that make up the numerator is exactly the same as that given in the previous pages—Net Working Capital equals Current Assets minus Current Liabilities. Therefore, after having determined the totals for current assets and current liabilities from which the current ratio is computed, it is further necessary only to subtract the total representing the liabilities from the total representing the assets and the result will equal the net working capital invested in a business. Concerning the denominator in this proportion, little further need be said, except to emphasize that the fixed assets must be given the restricted meaning as defined in the previous chapter, so as to distinguish them from fixed investments. For working capital has primarily to do with the operations of the physical production apparatus and not with other fixed investments that a firm might see fit to carry. Because, with working funds, raw materials, labor, and supplies are bought, and the finished products are held in stock until sold. Fixed investments, other than land for plant, buildings, and equipment, represented by fixed assets, as a rule, make no continuous demands on the working capital fund.

The ratio of Net Working Capital: Fixed Assets indicates the amount of net working capital possessed by a concern in relation to the amount of fixed assets. It is a measure of the number of dollars of working capital, more or less permanently in possession of a firm, as compared with the number of dollars invested in a plant or factory. The statement "more or less permanently in possession of a firm" is here used to forestall an immediate conclusion possible to be drawn, that the amount of net working capital represents sheer equity of the owners in the total working capital funds, for this would be true, only provided there were no bond or other long-time indebtedness. If no long-time indebtedness were present, it might be assumed that the net worth covered the fixed assets, as well as other fixed investments, and contributed the net working capital. Now, any change in the trend of this ratio may evidence a

greater or lesser reliance on short-time borrowing or on mercantile credit to furnish the working capital for production operations. Besides, it would also indicate the change in control over working capital in meeting the expenditures to keep the plant going. The chief reasons for changes in this ratio may be as follows:

1. The use of working funds for fixed expansion.
2. Distribution of past profits to owners.
3. Retention of earnings for working capital purposes.
4. Losses incurred.
5. Increasing or decreasing long-time indebtedness.
6. Reduction of capital or new capital brought into the business.
7. Disproportionate application of the additional capital, whether borrowed or contributed by stockholders, to current and fixed assets.
8. Marking the valuation of fixed assets up or down.
9. Disposition of fixed assets.
10. Increase or decrease in valuation of merchandise inventory and liquid investments.

Combination analysis of above two ratios.—If the trend of the current ratio is studied in conjunction with that of this ratio, certain significant changes in the credit worth of a concern become evident. Should the two ratios, for example, decline concurrently, then the credit risk increases, for it means that the firm is not only losing ground in keeping its former margin of current assets over current liabilities, but also that it may meet difficulty in keeping an adequate supply of permanent working capital. The net amount of working capital in a business must be regarded very much from the same angle as the supply of legal reserves in a bank—it acts as a buffer between current liabilities and investments in current assets which are likely to shrink in value. And, carrying the analogy further, this net fund is similar to the reserves of a bank, since the quantity of goods that can be produced and the number of operations safely undertaken hinges to a large extent on whether an adequate supply of permanent working capital is at hand. Therefore, it may be seen how great is the importance of maintaining sufficient permanent working capi-

tal, in order to meet the normal requirements of the fixed assets. Finally, to repeat, once more, what is normal for any particular concern is difficult to determine, and, from the standpoint of practical expediency, the trend of an individual concern's own ratios invariably afford fruitful results in determining the drift of that concern's credit worth.

Measures of efficient use of working capital.—We shall now pass on to consider the qualitative aspects of the working capital fund and the credit ratios which are taken as indirect measures of it. Turnover and the rate of turnover have been defined in preceding pages. It is in respect to turnover that a quantity of working capital assumes a quality—its efficiency of use. Since turnover of working capital is the circuit through which the typical working capital dollar travels, and since this circuit is from cash—to merchandise—to receivables—and back to cash, the rate of turnover, as we have seen, is equal to the number of times the average supply of the "average" working capital dollars, possessed by a firm in a given period, travels around this circuit. It must be clear also that a working capital dollar is most efficient and profit-bearing, as a rule, when its rate of turnover is high, since the "average" working capital dollar usually brings with it an increment of profit each time it travels the circuit. It is equally clear, on the other hand, that a slow turnover rate would mean that the "average" working capital dollar travels the circuit less often, and, therefore, reappears less often in cash with its increment of profit. According to statistical evidence, a rapid rate of turnover is usually accompanied by a smaller increment of profit for each turnover than is a slower rate. This proposition must be regarded as a fundamental law, because, otherwise, all business capital would flow to the industries and enterprises in which the turnover rate was high. It seems, therefore, that, in the field of business enterprise at large, firms which possess a rapid rate of turnover for their working capital can do a larger volume of business than can firms with an equal amount of working capital but with a slower rate of turnover. Notwithstanding this fact, the latter firms may find their enterprises as profitable as the former.

It is often stated that the rate of turnover is a direct measure of the efficiency displayed in the management of working capital. This statement would be true if all enter-

prises were alike in the basic factors that govern normal turnover of working capital. But, since individual enterprises differ greatly in this respect, even those that operate in the same industry, the reasons for the dissimilarity in rates cannot be entirely attributed to differences in efficiency of management, particularly of working capital. Therefore, in so far as a risk is affected by turnover, the trend of the turnover rate of the working capital as well as that of receivables and merchandise—in which the greater portion of working capital is invested—may be considered as sufficiently productive of information.

Credit ratios of turnover.—Below are presented the credit ratios that measure the rate of turnover of working capital, and of the two chief classes of current assets in which working capital is largely invested. It might be added that, in conjunction with the turnover of receivables and merchandise, the proportion of merchandise to receivables is of great significance.

1. Rate of turnover of working capital $= \frac{\text{Net Sales}}{\text{Current Assets}} \times 100.$

Net sales may cover any period such as, annual, semi-annual, quarterly, monthly.

Current assets must be the average for period covered by net sales.

2. Rate of turnover of receivables $= \frac{\text{Net Sales}}{\text{Receivables}} \times 100.$

Net sales may cover any period as above.

Receivables must be the average for that period and, as a rule, include all items of receivables, except those given by officers and employees. Generally, loans to subsidiary or allied companies should be included.

3. Rate of turnover of merchandise $= \frac{\text{Net Sales}}{\text{Merchandise Inventory}} \times 100.$

Net sales may cover any period as above.

Merchandise must be the average inventory for that period, and, in addition to the regular inventory carried, it should, as a rule, include goods "on consignment," meaning goods that the firm has shipped to be sold on a commission

basis. "Goods held on consignment" should not be entered under merchandise, except when a direct liability has been incurred against them.

4. Proportion of merchandise to receivables $= \frac{\text{Merchandise}}{\text{Receivables}} \times 100.$

Items that enter this proportion are similar to those above indicated. Also, the totals should represent the average for the period covered by the net sales in the above ratios. Otherwise, the analysis of those ratios in combination will lack a homogeneous basis.

Proper basis for construction of above ratios.—We have spoken here of taking net sales for a certain period, and the average of receivables and merchandise for the period covered by the net sales, in the construction of the above ratios. Theoretically, this method would achieve the best results, but, practically, it is often impossible to adopt. Sales figures are, in many instances, available only on a yearly basis. Naturally the most serviceable would be quarterly or monthly sales figures. In calculating the average receivables and merchandise inventory, similar difficulties are often met, since financial statements are only issued yearly. Here, also, shorter periods would be most desirable, especially if they were quarterly or monthly. But even though financial statements are issued for shorter periods, the figures representing merchandise inventory and receivables stand only for those on hand at the last date, or at the time the statement is struck off. Therefore, a true average is not obtainable, for, even though monthly statements were issued, the amount of receivables or merchandise on hand on the last day of this month would certainly not be representative of the amount that was on hand at any time during the month. The same criticism applies, to an even greater extent, to quarterly or semiannual statements, and, most of all, of course, to those issued once a year. The following is a suggestion as to the way out of these difficulties: if net sales figures cover a longer period than that for which the items of merchandise or receivables are available, then averages may be taken of the merchandise and receivables items for the shorter period. This, however, does not do away with the problem of obtaining a more representa-

tive average of merchandise and receivables than that based on the figures at hand at the time the statement is compiled. Since there is apparently no way out, except by obtaining the figures in greater detail, the credit analyst must construct ratios from the data at hand.

Interpretation of turnover ratios.—Turning now to the interpretation of the ratios above, the first—Net Sales to Current Assets—indicates the number of times that working capital is turned over within a given period. If the tendency of the rate is to increase, then a decline in the ratios of current and net working capital to fixed capital would not necessarily indicate a weakening in the working capital position, unless the latter ratios declined more rapidly than the turnover rate tended to increase. If all three increased, a very favorable condition would be indicated. On the other hand, should the rate of turnover slow up at the same time that the current and net working capital to fixed assets ratios decreased, then a weakening credit position would be manifested. The principle to be deduced, obviously, is that the presence or absence of a continuously adequate supply of working capital in a business must be judged not only on the basis of amount but also on the basis of its liquidity or rate of turnover.

From the standpoint of short-time credit, it is highly desirable to supplement the working capital turnover ratio with ratios that indicate more in detail the liquidity of the two major investments of working capital, namely, receivables and merchandise. In the circuit through which the working capital dollar travels (cash—to merchandise—to receivables —and back to cash), these items represent separate phases of the dollar's course. In actual practice, the length of time that working funds remain tied up in merchandise and receivables varies. The liquidity of receivables and the active marketability of merchandise may be tested by the Net Sales: Receivables and Net Sales: Merchandise ratios. If we consider first the Net Sales: Receivables ratio, it is desirable to know the trend of the turnover rate of receivables, which is also the rate of collection, for this will indicate several things:

1. Is the firm increasing or decreasing its net terms of sale, or slowing up or progressing in collections?
2. Is the firm selling more or less on credit or cash?

This ratio will, therefore, show whether receivables consume a greater or lesser portion of working capital, and will indicate the time that the average dollar remains in the form of receivables.

The ratio of Sales: Merchandise will give evidence of a similar influence on working capital as regards merchandise, and the trend of the rate of turnover of merchandise may suggest the following:

1. Is the firm increasing or decreasing its inventory?
2. Is the firm marking its merchandise inventory up or down?

Significance of merchandise to receivables ratio.—But, before a summary evaluation of the trend of these two ratios can be made, it is highly important to consider the relative amounts of merchandise and receivables that constitute the major portion of the invested working capital. This proportion can be obtained by the Merchandise: Receivables ratio, for it will indicate the number of dollars of working funds contained in merchandise, as compared with that absorbed by receivables. It might be assumed that the working capital consumed by receivables is one step nearer cash (not only from the standpoint of collection, but also from that of salability) than that invested in merchandise, and that, therefore, a decline of the Merchandise: Receivables ratio must be interpreted as favorable. But the element of time in reference to this shift is highly significant. For example, as business activity reaches its maximum in closing periods of prosperity, a decline in this ratio might be interpreted as highly favorable, since, in the following period of depression, receivables will not shrink in value as a result of bad-debt losses, to the extent that merchandise values will shrink. On the other hand, an increase in this ratio might be interpreted as equally favorable at any time within the period of revival, and up to nearly the end of prosperity, because laying up inventories for higher prices in a sellers' market might be construed as quite advantageous. It must be noted that there is a tendency to sell more on the basis of cash, in periods of rising prices, when sellers' markets prevail, and more on the basis of time in periods of falling prices, when buyers' markets prevail. This general fact greatly influences the trend of this ratio.

Combination analysis of working capital ratios.—However, when the trend of the Merchandise: Receivables ratio is studied, in conjunction with the Sales: Receivables, and Sales: Merchandise ratios, valuable information may be obtained. If the Merchandise: Receivables ratio declines, while, at the same time, the Sales: Receivables ratio increases, not only would less working capital be absorbed by credit sales than by merchandise, but, also, what is invested in receivables would manifest a quicker turnover. A reverse trend of the ratios would indicate the opposite conclusion. If the Merchandise: Receivables ratio declines, and the Sales: Merchandise ratio also decreases, we must draw the conclusion that working capital is being tied up to a greater extent in merchandise than in receivables, and that it is also decreasing in liquidity, owing to a decreasing turnover rate of merchandise.

By supplementing the interpretation of Net Sales: Current Assets ratio by the last three ratios, a closer scrutiny into the conditions prevailing in the current assets is possible. This procedure offers a method of tracing the working capital fund through its various stages of investment, before it reappears as cash, and the information thereby obtained has to do with the liquidity of the two major current assets—their rate of turnover, or the time during which the average working capital dollar remains tied up in these assets—and it has also to do with the relative amounts of working capital so invested.

Practical ratio analysis of credit cases.—The succeeding analysis of the credit worth of the seven companies referred to in the foregoing chapters will center on the supply and position of working capital. The theory underlying the method we have adopted has been amply described in previous pages. For the sake of clearness, however, let us restate briefly the factors around which this phase of credit ratio analysis is conducted. The elements into which the whole working capital problem may be separated are as follows:

First.—The proportion of current assets to current liabilities.

Second.—The amount of net working capital in relation to fixed assets.

Third.—The turnover rate of the gross working capital, the latter being equal to the total current assets.

Fourth.—The relative amounts of merchandise and receivables, the two major portions of current assets in every business concern.

Fifth.—The turnover rate of the two distinct and major elements of current assets—receivables and merchandise.

A classification of the credit ratios appertaining to the above factors may be made clear by the following:

Above Headings	*Credit Ratios*
First	Current Ratio
Second	Net Working Capital: Fixed Assets
Third	Net Sales: Current Assets
Fourth	Merchandise: Receivables
Fifth	Net Sales: Receivables Net Sales: Merchandise

Let us summarize and clarify a little what has been said so far in this chapter regarding working capital analysis. The amount of current assets in excess of current liabilities existing determines the probable ability of a firm to meet its rather constantly recurring short-time obligations. The amount of net working capital existing in a business, in relation to the fixed assets, shows what supply of working funds may be depended upon to keep its plant going. The rate of turnover of current assets furnishes further evidence as to the probable sufficiency of both of the above-mentioned amounts of working capital. The proportion of merchandise to receivables indi-

SUPPLY AND POSITION OF WORKING CAPITAL OF THE DEPARTMENT STORE

	-*Ratios in Percentages*-									
Credit Ratios	*1914*	*1915*	*1916*	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Current Ratio .	288	284	299	1002	209	186	211	202	201	204
Net Working Capital: Fixed Assets	341	350	408	893	182	169	210	192	171	200
Net Sales: Current Assets ..	0	244	241	200	183	198	258	314	327	307
Mdse. : Receivables	83	102	115	121	184	196	153	141	131	127
Net Sales : Receivables ...	0	504	523	531	530	633	687	778	770	715
Net Sales: Merchandise* ...	0	493	456	439	287	322	449	552	589	563

* Net Sales were taken, since the Cost of Sales was not given in the statement.

cates the relation of the two major components of current assets—those that must be sold, and those that must be collected. The separate turnover rates of each of these demonstrate the degree of their liquidity, that is, their salability and collectibility, respectively.

Résumé of previous conclusions.—Our analysis of eight of the ratios of the department store led us to the opinion that the store was borrowing rather liberally on short-time obligations, and that it used more capital than was desirable for fixed investment purposes. Such was the tendency in 1923, pointing to a slight weakening of the store's financial structure.

Activity in current operations, or manifestations of productiveness in working capital, are prima facie evidence of the soundness of the capital investments of an enterprise. Capital sunk in fixed or permanent investments is regained only by the reproductivity of the assets through a series of uses by which the plant yields products for sale. The capital retained for working purposes makes possible the active production operations of a plant. It is the circulation of working funds in and out of the business that activates the concern. This fund and its uses for current assets and productive expenditures evidences, in the final analysis, the profitableness and soundness of a business and, with them, its credit worth.

Analysis of working capital ratios.—Beginning with the trend of the current ratio, it is evident from the analysis that, prior to 1918, this store maintained an adequate margin of current assets over current liabilities. The enormous rise in 1917 can be traced directly to the new stock issues which made possible a huge increase in current assets. From 1918 to 1923, however, the company does no more than keep close to the traditional "2 to 1" proportion, with the exception of a drop below 200 per cent in 1919. Judging by the factors that influence the trend of this ratio, as presented in the outline above, and by the evidence obtained from the statements of this store in reference to each of these factors, this hovering around 200 per cent seems due to the following reasons: (1) retirement of preferred stock since 1920; (2) increase of fixed assets by means of reinvested earnings until 1923; (3) profits not left in business for working capital purposes; and (4) in 1923, a great expansion in current assets partly by purchasing on accounts payable, but even more, by

the employment of earnings, with the result that the current ratio rose slightly. The adequacy of this "2 to 1" proportion must be judged later, after other ratios have been considered.

The amount of net working capital which, in the case of this firm, is all owned, is, in 1923, equal to $1 for every $1 of current debt, and to $2 for every $1 of fixed assets. The larger amount existing prior to 1917 was severely reduced in 1918 and 1919. Again, after an improvement in 1920, this rate declined until 1922, with the increase in 1923 previously noted. With reference to the net working capital, the reasons for this changing proportion have been given above in connection with the analysis of the current ratio. It seems that, in 1918, and, again, in 1921 and 1922, working capital was used for the purpose of increasing the fixed assets. Although the latter increased from 1918 to 1923, the biggest increases occurred in 1918, 1919, and 1922. The trend of the two ratios, therefore, leads us to the conclusion that the firm, in recent years, attempted to operate with a smaller margin of net working capital. In 1923, the cessation of fixed expansion and the reinvestment of good-sized earnings, in spite of considerable current expansion, places the store in a little better position.

These lower ratios seem somewhat justified, if the turnover of the gross working capital is taken into account. The Net Sales: Current Assets ratio indicates a very favorable trend. The turnover rate, of approximately 3¼ times a year, or 327 per cent, in 1922, is the best attained by the concern during the period. In 1923, the drop of 20 points need not be taken as necessarily serious. Indications are, therefore, that the firm's working capital shows a greater activity, and the position may be considered as all the better, in that the years when the ratio was most satisfactory were not generally considered good business years.

The proportion of Merchandise: Receivables gains consistently until the end of 1919. This offers the suggestion that the firm is either speculating in inventory or selling closer to a cash basis. If reference is made to the Net Sales: Receivables, and Net Sales: Merchandise ratios, it becomes evident that the former is the more likely assumption, for the Sales: Merchandise ratio decreases, while no great changes occurred in the Sales: Receivables ratio. From 1920 to the end of

1923, the Merchandise: Receivables ratio declines continuously. This might have been the result of selling more goods on credit, or of reducing overstocks and adopting gradually a more hand-to-mouth buying policy. It appears that the firm has practiced both to some extent. The turnover of its receivables reached a high point, for the average collection is about 8 times a year in 1921. In the succeeding two years it falls somewhat, indicating either a greater volume of time sales or longer credit terms. The turnover of merchandise has been increasingly active up to 1922 with only a mild retardation in 1923. Renewed current expansion is evident.

Summary of ratios in combination.—With respect to the supply and position of its working capital, this store shows these characteristics: (1) the current ratio hovers around 200 per cent, as does the ratio of net working capital to fixed assets, in 1923. The turnover of the current assets has been greatly improved, although the recent expansion has, to some extent, hindered its progress. Merchandise on hand does not indicate overstocking, although forward purchasing is evident, while receivables show both a slowing up in collection and an increase in volume. The working capital tied up in inventories and receivables entails the following costs: interest on money; depreciation; insurance; storage; bad-debt losses; and increased collection expense. The growth of the firm's sales in 1923 justifies the current expansion undertaken. This growth may shortly make good the increase of fixed assets also. The store is doing well, but it should safeguard its working capital against possible encroachment of losses and of expenses for fixed expansion.[2]

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[2] The comparison of the ratios of this store with the Current Merchandise: Receivables, Sales: Receivables, and Sales: Merchandise ratios of 34 and 55 department stores for the years 1922 and 1923 respectively, shows interesting results:

	1922		*1923*	
Credit Ratios	*This Store*	*34 Stores*	*This Store*	*55 Stores*
Current Ratio	201	267	204	275
Merchandise: Receivables	131	127	127	127
Net Sales: Receivables	770	680	715	729
Net Sales: Merchandise	589	476	563	497

These figures evidence that the department store does not meet the test with respect to current ratio, although it does in the second ratio, while it shows only a slightly lower collection condition and presents a far better rate of turnover of merchandise.

SUPPLY AND POSITION OF WORKING CAPITAL OF THE WHOLESALE HARDWARE CONCERN

Credit Ratios	*Ratios in Percentages*					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Current Ratio	286	266	205	195	219	206
Net Working Capital: Fixed Assets	261	260	185	114	105	132
Net Sales: Current Assets...	254	280	223	215	200	144
Merchandise: Receivables ..	211	138	159	79	94	118
Net Sales: Receivables	836	744	628	432	407	328
Net Sales: Merchandise	396	537	394	545	430	278

Former analysis showed weakening condition.—In so far as the analysis of the first two groups of ratios is concerned, there was nothing in the financial position that offered bright hopes for this concern. The indebtedness became burdensome and the worth suffered from losses. The company showed a progressively weaker financial structure. Whether any signs of recovery are present is a matter to be determined by an examination of its working capital position.

Unfavorable tendencies in supply of working capital.—The decline in the current ratio from 1918 to 1921, which was quite striking, must have been due primarily to the withdrawal of earnings from the business and the increased investment of working funds in fixed assets. Tax reserves were high in 1919 and 1920, and it is evident that the concern placed much reliance on short-term borrowing. It seems probable that the company's increase in surplus up to the end of 1920 was due to pricing up assets rather than to reinvesting earnings. At least it is quite evident that money left the business in some shape or form. There can be little doubt that the interest charges on the large debt swelled the losses. By a rigorous policy of liquidating current indebtedness in 1921 and 1922, and of selling off or marking down the inventory in 1921, the firm was able to pull up to a satisfactory current ratio in 1922. In order to do this the losses incurred produced a decided reduction in the surplus. It seems to have been rather difficult for the firm, during 1923, to maintain this ratio at the level reached in 1922. The policy of increasing the inventory by an increase in payables seems hardly to be warranted at this time, since its sales have not recovered sufficiently. Although for further funds recourse was had to

long-term borrowing, this was partly offset by another addition to fixed assets and a further decrease in the net worth.

That the firm was forced to resort to more funded obligations, with their accompanying weakening tendency, is shown in the proportion of net working capital to fixed assets. That part of the funds so procured which was not offset by losses incurred and extension of plant was an aid in bolstering up the net working capital position, this ratio of 132 per cent, in 1923, corroborates. Since this is a merchandising company and, therefore, should show a large supply of capital available for the purchase and sale of goods, after buildings have been provided for, the condition indicated by the ratio is very bad.

Qualitative aspects of working capital unfavorable.—If we turn now to the ratio of Net Sales: Current Assets, the position of this firm in 1923 appears still worse. The progressively rapid decrease of this ratio indicates that the firm has fallen down markedly in the efficient use of its working funds. This fact is of more significance when we remember that the smaller supply of net working capital in relation both to fixed assets and current liabilities should have shown a greater, instead of a lesser, turnover and efficiency. Whereas the firm's working capital possessed a turnover of 2½ times a year in 1918, it dropped to less than 1½ times in 1923.

The course of the Merchandise: Receivables ratio during the period gives a clue to at least two important features: (1) that the firm speculated heavily in inventory up to the end of 1920, bringing about the heavy losses in 1921; and (2) that its receivables became seriously "frozen" after 1920. In the attempt to collect its accounts, the firm gives evidence of having been forced to take promissory notes in 1921 and 1922. Naturally, the inventory policy followed prior to 1921 cost the firm dearly, and the comparatively large volume of receivables it was forced to carry meant not only that the available amount of working funds was being impaired, but also that larger bad-debt losses, collection expenses, and loss of interest on capital were being incurred. The Net Sales: Receivables ratio gives further evidence that the firm's collections passed from the high rate of nearly 8½ times a year in 1918 to only 3¼ times a year in 1923. Nor does the Net Sales: Merchandise ratio tell a much different story. The policy of stocking up in 1918 and 1920 is reflected in the

position of this ratio in those years. The high ratio of 1919, which was the correct policy, should have prevailed for 1920, together with cautious purchasing. The recovery in the merchandise turnover in 1921 was merely fictitious, for the firm dumped its overstocks on the market at heavy losses. The ratio in 1922 appears rather gratifying, but evidently the firm had learned nothing from experience, because, in 1923, it is doing, again, exactly what it did, but should not have done, in 1920. Not all of the influences, indeed, which operated to place this firm in a bad financial position were within its control. The agricultural depression affected not only its market but also its collections. Nevertheless, it shows a very weak management in its inventory policy, and this renders the firm a very poor credit risk at the end of 1923. The conclusion is unavoidable that, with the current ratio of 206 per cent, in 1923, qualified by the exceedingly poor trend of the other six ratios, the concern's margin of safety, in its supply and posi ion of working capital, is almost nil.[3]

SUPPLY AND POSITION OF WORKING CAPITAL OF THE WHOLESALE GROCERY CONCERN

	-Ratios in Percentages-					
Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Current Ratio	211	210	227	251	249	251
Net Working Capital: Fixed Assets	228	368	347	282	264	259
Net Sales: Current Assets	300	277	361	321	297	336
Merchandise: Receivables	181	167	140	129	131	139
Net Sales: Receivables	899	796	929	794	737	861
Net Sales: Merchandise	496	475	664	615	560	618

Ratios point to sound working capital management.—The analysis of this concern's ratios in the two foregoing chapters pointed to very sound methods in procuring capital

[3] What has been alleged as a result of the above analysis is further corroborated when this wholesale hardware concern's ratios are compared with the combined ratios of 35 and 38 wholesale hardware concerns for 1922 and 1923, respectively:

			1923	
Credit Ratios	*This Firm*	*35 Firms*	*This Firm*	*38 Firms*
Current	219	272	206	262
Merchandise: Receivables	105	134	132	153
Sales: Receivables	407	480	328	549
Sales: Merchandise	430	366	278	325

and in using it in well-balanced proportions. It remains to be seen now how the company shapes up with reference to its working funds and current operations. The current ratio progresses very satisfactorily. Even the severe depression of 1921 produced no weakening effects on its trend. As a matter of fact, this ratio, in that year, increased surprisingly, and maintained the level then attained throughout the remaining years. There is no extraordinary reason for this satisfactory showing except that of sound working capital management.

The relation of net working capital to fixed assets shows a continuous reduction in the former, since 1919. The concern had $3.68 in 1919, and $2.59 in 1923, for every dollar of fixed assets. This is the result of the expansion of fixed assets. The validity of this policy can best be tested by the ratio of Net Sales: Current Assets. This ratio indicates a more rapid turnover of the current assets in 1923 than has ever been attained in the six years, with the exception of 1920. It would, therefore, seem that the very good current ratio, in conjunction with a very good turnover ratio of current assets, entirely counterbalances the decline in the net working capital position in relation to the fixed assets.

The Merchandise: Receivables ratio declines until the end of 1921 and thereafter expanded to the end of 1923. This company did not make the mistake of speculating in inventory during the boom of 1919 and 1920. As a matter of fact, it did not increase stocks in 1920, even though the great increase in sales might have justified such a policy. The large increase in turnover of inventory in 1920, to which the Net Sales: Merchandise ratio bears witness, is further evidence of this. The advance in inventory by the end of 1923 seems wholly satisfactory in view of the excellent degree of salability of merchandise, as shown by the Net Sales: Merchandise ratio of 618 per cent. Proceeding now to the receivables as the other major current asset, the company again shows good management and profits in 1920. The increase in receivables at that time was evidence that the firm was working off its merchandise at a profit, and took receivables for a greater portion of the sales. The quality of the receivables did not deteriorate, however, for their turnover jumps from 796 per cent in 1919 to 929 per cent in 1920. In the two succeeding years a greater proportion of credit sales was manifested.

This may be seen from the greater volume of receivables in relation to inventory, and their retarded turnover rate, which declined each year. By the end of 1923, a great improvement occurred in the collectibility of receivables, although at the same time the amount did not gain in equal proportion to the gain of merchandise.

This wholesale grocery concern gives a very good account of itself at the end of 1923, and demonstrates the efficient management of its working capital and current assets.[4]

SUPPLY AND POSITION OF WORKING CAPITAL OF THE SHOE MANUFACTURING CONCERN

	-Ratios in Percentages-					
Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Current Ratio	179	203	192	282	274	245
Net Working Capital : Fixed Assets	41	62	59	56	50	54
Net Sales : Current Assets...	223	171	207	182	187	202
Merchandise : Receivables ..	143	153	92	77	83	92
Net Sales : Receivables	561	445	419	340	367	407
Net Sales : Merchandise	391	290	453	441	444	443

Recapitulation of previous analysis.—Having now completed the study of the merchandising companies, we will pass on to the manufacturing concerns. The first of these, the shoe manufacturing concern, exhibited a tendency to lose ground in the matter of obtaining capital, for the current debt, which was the only debt it incurred, was creeping up on the net worth. It was observed, however, that the company maintained very good proportions among the uses of this capital. Since the debt was all on short terms, the concern retained the option of liquidating it when funds would not be required and thereby economizing on interest payments. This current borrowing, as was pointed out, has a sound basis, in that the firm does not own a great portion of its fixed assets. Only the land and buildings need be owned, and even these may at

[4] A comparison of the working capital ratios of this concern with those developed from similar concerns by the Robert Morris Associates is worth while:

	1922		1923	
Credit Ratios	*This Firm*	*56 Wholesale Grocers*	*This Firm*	*108 Wholesale Grocers*
Current Ratio	249	221	251	208
Merchandise : Receivables	131	138	139	139
Sales : Receivables	737	793	861	832
Sales : Merchandise	560	562	618	581

times be leased, as is the case with the shoe machinery. From the creditors' standpoint, also, loans on the commodity basis would be much more desirable, and could be let on easier terms to companies like these than could long-time loans featuring mortgages on fixed property. Nevertheless, it must not be assumed that the shoe concern is relieved of fixed charges. Rentals must naturally bulk large in place of depreciation, etc., as charges against income.

Trends of current ratio.—The course of the current ratio of this firm exhibits two interesting phases. Beginning with a rather low proportion of current assets to current liabilities in 1918, it maintains approximately the traditional "2 to 1" figure in 1919 and 1920. The sudden and marked increase in 1921 is followed by a downward tendency in the succeeding two years. Evidence is at hand that the firm permitted serious inroads on its surplus in 1920, and that this resulted from the strikingly premature overexpansion that seems to have occurred in 1919. The firm must have sensed trouble ahead and must have sought to unload its stocks in 1920 at all costs. The decline in the ratio in 1920 might easily be explained by the enforced liquidation. A wholesome showing, moreover, is present in the accumulation of receivables in that year.

The next phase in the trend of the current ratio begins in 1921. The reasons for its marked rise can be imputed to further rigorous liquidation of stocks and receivables, which led to a marked reduction in current liabilities and a decrease in cash, this, with the accompanying loss, being reflected in the Surplus account. The increase, then, of the ratio in 1921 was the result of drastic liquidation and not the reflection of expanding prosperity. The decline in the ratio up to the end of 1923 must be interpreted as the result of normal prosperity and moderate expansion. Profits in 1922 were low, while in 1923 they gained considerably. The increase in the net worth attested this fact. Being forced to rely on current borrowing, the company found its current debt mounting step by step as its current business increased. The general overexpansion prevailing in the shoe industry during 1921 and 1922 bred keen competition, so that, beyond new stock issues, the net working capital position could not be greatly improved.

Other working capital ratios show good risk.—Since the amount of fixed assets is small in comparison with the volume

of business, the proportion of net working capital to fixed assets loomed large. Although fluctuating, this ratio is somewhat lower in 1923 than it was in 1920, 1921, and 1922. The firm demonstrated a fair increase in fixed assets in 1923. If this reduced ratio is compared with the activity of the net working capital, the situation shown in 1923 is gratifying, since the Net Sales: Current Assets ratio improved consistently from 1921 onward.

The Merchandise: Receivables ratio corroborates, to a large extent, what has already been said in connection with the current ratio. The company ceased speculating in inventory after 1919. It sought to work off the overstocks in 1920, taking receivables in return. This was a sound policy. True, the firm took losses, but equally greater losses were staved off. The augmented credit sales were reflected in the turnover of receivables from 1918 to the end of 1921. It is also evident that the firm had difficulty in making collections during 1921. That it stocked up heavily with goods in 1919 is further proved by the Net Sales: Merchandise ratio; but it showed excellent ability in keeping the merchandise moving off the shelves at an even rate from 1920 to the end of 1923, accomplishing this simultaneously with an improved receivables turnover. The combined trend of the Current ratio, Merchandise: Receivables; Net Sales: Receivables; and Net Sales: Merchandise ratios, indicates that the firm's gross profit margin has not been large; for the improvement in merchandising and receivables should have supported the Current ratio on a higher level. Nevertheless, the current position of this company is strong and leads to the conclusion that the firm demonstrates an efficient and well balanced use of the capital employed.[5]

[5] The previous comparisons made are here continued:

	1922		1923	
Current Ratios	*This Firm*	*31 Shoe Mfgrs.*	*This Firm*	*48 Shoe Mfgrs.*
Current Ratio	274	297	245	271
Merchandise: Receivables	83	116	92	108
Net Sales: Receivables	367	458	407	551
Net Sales: Merchandise	444	374	443	394

That the above firm is selling heavily on credit is clearly shown by the above comparison. Although its turnover of merchandise is good, its collections are slow. The net result is that the loss in working capital required for merchandise is absorbed by the slow receivables.

SUPPLY AND POSITION OF WORKING CAPITAL OF THE SILK MANUFACTURING CONCERN

Credit Ratios	*1918*	*1919*	*1920*	*-Ratios in Percentages-* —*1921*— 7/2	12/31	—*1922*— 7/1	12/31	—*1923*— 6/30	12/31
Current Ratio	253	246	362	291	315	257	228	391	347
Net Working Capital: Fixed Assets.	62	111	100	112	132	71	84	75	77
Net Sales : Current Assets	191	134	226	163	194	125	123	133	76
Merchandise : Receivables	147	108	174	111	163	93	112	91	254
Net Sales : Receivables	514	291	659	365	538	256	271	266	279
Net Sales: Merchandise	349	369	379	327	329	274	241	293	110

Résumé of former ratios.—The sudden attempt, during 1923, on the part of the silk manufacturing concern, to rehabilitate its finances, was predicated, as we have seen, on an overexpanded condition. Fortunately, the firm had not heavily mortgaged its goodwill nor its fixed assets hitherto, and so had left open the source of borrowing long-time funds. The huge inventory and fixed expansion in 1922 settled a heavy burden on the concern's working capital. The rapidly expanded current debt jeopardized the current position. The premeditating of further increase in fixed assets, the protecting of the working capital position, and the insuring of an adequate supply of the latter for the operation of increased plant facilities necessitated an appeal to funded obligations. This extra borrowing did not detract from the normality of the proportions between the sources of either the capital or the supply. In the matter of capital investment, however, the weakness of an oversupply of fixed assets is becoming noticeable. Whether this was a justifiable weakness, the following discussion will attempt to decide.

Current ratio weakening.— One who is imbued with the traditional sanctity of the "2 to 1" current ratio would say that the firm's current position was at no time in danger. It maintained throughout the period a wholesome margin of over 200 per cent. The sudden decline in 1922, however, merits an inquiry. It will be noted that profits were not greatly curtailed, and that sales proceeded at a satisfactory level in spite of the prevailing business depression. Further-

more, the net worth rose considerably. But, on the other hand, the working capital supply was subject to pressure, because of the enormous expansion in both current and fixed assets. The trouble was, not that the working capital was reduced or dissipated, but that the demands on it were greatly increased. It is quite evident that the firm was attempting to expand its fixed investments by means of current borrowing. This marked increase in current debt for expansion purposes played havoc with the current ratio. Naturally, the further increase in reinvested earnings and the heavy issues of funded obligations, used primarily to reduce the heavy current debt, buoyed up this ratio to a safer level in 1923.

Unwholesome tendencies of other ratios.—Vigorous expansion seriously jeopardized the amount of net working capital in relation to the fixed assets. In 1923, the company produced only approximately 76 cents of net working capital for every $1 of fixed assets. This meant, that, in order to assure sufficient funds for keeping the plant in operation, it became necessary to resort to long-term borrowing, since the investment market was not favorable to an issue of stock at that time. The encroachment of fixed assets on the supply of net working capital must be regarded as more serious, in view of the slowing down evidenced by the turnover of the current assets. The congested state of affairs in the company's current operations, manifested in 1922, seems to be the result of the firm's poorly conducted inventory policy. Sales grew satisfactorily, but purchasing and production aimed at a still higher mark. The liquidation of the current obligations previously described in the fore part of 1923, and the following improvement in the size of the net working capital, was accompanied by a huge reduction in inventory which netted an increase in the turnover of current assets. But, in the second half of 1923, the optimism of the firm again overreached itself. Its greatly increased plant facilities turned out goods for a lethargic market, and congestion of stocks was inevitable.

The ratio of Merchandise: Receivables further supports the conclusions reached. In 1922, the effort was begun to force goods into the market on credit terms, owing to overexpansion and vigorous competition. The result was that the firm tied up much of its already curtailed supply of working capital in receivables. This policy was evidently continued

during the first half of 1923. By the latter part of the year the company's markets evidently became saturated. The effort was now made to salvage the receivables. The trend of the Net Sales: Receivables, and Net Sales: Merchandise ratios affords very interesting evidence of the difficulties encountered. The rapid drop in silk prices in 1919 brought about an attempt to sell on credit. During the next two years a very good showing was made in collections and cash sales. In the last two years, however, the collectibility of receivables suffered severely, or the time extended in order to induce sales became unduly long. The salability of merchandise also began to suffer by the first part of 1922. But the second half of 1923 witnessed extraordinarily subnormal conditions; sales dropped enormously, while merchandise stocks attained actual superabundance.

SUPPLY AND POSITION OF WORKING CAPITAL OF THE TWO SPECIALTY METAL MANUFACTURING CONCERNS

Company 1

	-*Ratios in Percentages*-					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Credit Ratios:						
Current Ratio	204	199	205	206	205	200
Net Working Capital: Fixed Assets	61	75	64	67	57	54
Net Sales: Current Assets.	235	239	270	255	278	299
Merchandise : Receivables	114	122	111	91	93	69
Net Sales: Receivables ...	531	561	605	519	575	540
Net Sales: Merchandise ..	464	458	542	565	616	779

Company 2

	Ratios in Percentages					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Credit Ratios:						
Current Ratio	206	202	199	199	195	167
Net Working Capital: Fixed Assets	85	118	109	82	62	44
Net Sales: Current Assets.	267	231	245	244	205	208
Merchandise : Receivables	53	71	97	109	122	142
Net Sales: Receivables ...	432	415	508	537	480	530
Net Sales: Merchandise ..	805	582	520	589	393	362

It seems almost superfluous to describe the weakened current position into which this firm had juggled itself by the end of 1923. The management seemed quite sound and conservative until 1922. But since then it has sought business

at any cost. Its heavy expansion will gradually eat into the financial structure of the company, unless more propitious marketing influences arise than those manifested at the end of 1923.

The two small manufacturing establishments were compared on the basis of the two former sets of credit ratios. It was found that Co. 1 manifested a very healthy financial condition with reference to its source and supply of total capital. It was further substantiated that the concern displayed a well proportioned use of its capital. Co. 2, on the other hand, showed up very differently in the interpretation of its ratios. Its sources of capital were poorly selected, while the nature of its uses jeopardized the financial control of the business. It was expanding too rapidly, with borrowed funds.

Current ratios compared.—Comparison of the trends of the current ratios of these companies indicates that both Co. 1 and Co. 2 are maintaining an approximate 200 per cent position until 1922. The slight drop, in that year, of Co. 2, is followed by an acute decline in its current ratio by the end of 1923. While Co. 1 is able to maintain a satisfactory current ratio throughout the period, and at the same time is able to retire its funded debt, Co. 2 is required to increase its long-term obligations in order to keep the ratio at its level. A further increase of funded debt in 1923 could support the working capital position no longer, for the heavy interest and other fixed charges, as well as the increase in current expansion, outweighed the supply of working funds. Besides, Co. 2 utilized its working funds for the purchase of fixed assets. These malpractices seriously reduced the margin of current assets over current liabilities.

Comparative study of other ratios.—The supply of net working capital in relation to the fixed assets seems to have been smaller for Co. 1 than for Co. 2, until the end of 1923, when that of Co. 2 dropped considerably. It must be remembered, however, that the better showing of Co. 2, in this respect, is primarily the result of its policy of bringing long-time funds into the business, whereas Co. 1 is continuously relying on smaller amounts of funded debt. The increased long-term indebtedness finally conquers the financial position of Co. 2. Since it has heavier interest charges to make, one would expect that its current assets should evince a more rapid

turnover than those of Co. 1, which is relying more and more on its own funds. But a survey of the trends of the Net Sales: Current Assets ratios of both companies indicate that the Current Assets of Co. 1 are more active than those of Co. 2. The trend of the ratio in 1922 and 1923, in the latter company, falls considerably, while that of Co. 1 improved markedly. The weaker position of Co. 2 in this respect needs no further emphasis.

Carrying the analysis further to gain a closer insight into the policies of management of the working capital, we observe that the trends of the Merchandise: Receivables ratios of these firms proceeded in opposite directions. It proves that Co. 1 is either selling more on time, or is suffering a reduction in the rate of collections, and that Co. 2 is selling more for cash, is accelerating the rate of collection, or is selling its receivables. Turning to Net Sales: Receivables ratios, it becomes clear that Co. 1 had an advance in credit sales, but did not thereby reduce the quality of its receivables, for their turnover has scarcely been affected. The quality of the receivables of Co. 2 is not quite so good as that of Co. 1, and, since the former company did not show more rapid collections—at least not during the last three years—it must have sold more goods for cash. However, although no proof is present, it seems highly probable that Co. 2 has been selling or discounting its receivables in order to obtain cash, which it needed badly. The consistent improvement in the rate of merchandise turnover shown by Co. 1 augurs well for the concern. The excellent salability of its products in 1923 is to be envied. Co. 2, on the other hand, showed symptoms of serious overexpansion. Its turnover in merchandise fell from the high point of 805 per cent, in 1918, to only 362 per cent, in 1923. This company is growing too fast. It is creating fixed assets, and, therefore, plant facilities, at an enormous pace. This equipment has been obtained at the expense of working capital and by a greatly increased indebtedness. The company's working capital position is becoming impaired through increasing fixed charges and withdrawals, for the purchase of fixed assets. The inadequate supply is becoming less and less efficient, for, undoubtedly, receivables are being sold, which reduced the profits that should accrue to the firm. Furthermore, the excessive stocks of merchandise are becoming less movable.

All of this leads to the belief that Co. 2 must soon set its financial house in order, or pass through the inevitable reorganization. Co. 1, on the other hand, evidences a strong working capital position.

Recapitulation.—

A. Department Store—Ratios point to a fairly strong and liquid working capital position.
B. Wholesale Hardware—Ratios prove that the firm is bad off.
C. Wholesale Grocery—Ratios show that firm is in a very good position.
D. Shoe Manufacturing—Ratios indicate a well used supply of working capital.
E. Silk Manufacturing—Ratios show poor working capital management.
F. Co. 1. Manufacturing—Ratios show a very good position.
G. Co. 2 Manufacturing—Ratios point to severe difficulties not far in the future.

References.

Bliss, "Financial and Operating Ratios in Management," Chapters xvi, xviii, xix, xxxiii, xxxiv, xxxviii.

CHAPTER X

CREDIT RATIO ANALYSIS OF THE FOURTH FACTOR IN CREDIT, THE POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS

Credit risks and profits.—Thus far considered, we have three of the five major credit factors in credit worth, together with the primary ratios that serve as a basis for analyzing financial statements, in their bearing upon each of these factors. We come now to the fourth element in credit risk, namely, the productivity of capital and assets. Productivity is the test of efficiency in the use and management of capital, from whatever source, in face of the vicissitudes of business. Financial results, good or bad, may be adequately measured by the earnings of a business in the shape of pecuniary profits. But earnings represent results achieved in the course of past business and financial operations, and are not accurately predicative of probable returns in the future. For purposes of credit analysis, financial results, as recorded by profit and loss statements, do not offer a sound basis for discerning what may be the future fortunes of a business enterprise. True, if discretion is used in employing records of past and present earnings for the purpose of forecasting future productivity—if they are analyzed, that is, in relation to the business cycle, not overlooking the individual peculiarities of the enterprise and the industry to which it belongs, and their relation to the up-and-down swings of business—they offer some credit information. But, as previously emphasized, profits reflect results of past operations, and these are so distant as to be of no great current value in estimating future earnings. Credit judgment, of prospective profits, must be based on indicative current data.

Criteria of potential productivity.—Granted the above viewpoint as to indicia of capital productivity, the credit man is obliged to search for more immediate evidences in current

data upon which to base an adequate estimate of potential productivity. We have arrived, then, at the credit factor to be considered—potential productivity of capital invested. Perhaps it may overcome, to some extent at least, the difficulty referred to above. Certain evidences are available in the financial statments of a concern that predicate future profits with reasonable certainty, provided general business activity is taken into account. Profits may actually be present before they appear as surplus or net income in the profit and loss statement. For example, they might exist in the merchandise on hand; more definitely in the receivables to be collected; and finally in their ultimate form as cash, or liquid investments. Of course, there are always chances of again losing the profits so embodied in the major current assets. Inventory may not be marketable, even at the inventoried price; receivables may not all be collectible, and bad-debt losses may occur; cash may be dissipated by profitless experimentation, promotion, or speculation; or reinvested in other current assets and so subjected to risk; or used for purposes of fixed expansion, paying off long-time indebtedness, etc. Therefore, it can be clearly seen that, in order to forecast future earnings, potential productivity of capital invested must be the guide. This productivity of capital is discernible from certain elements in the financial statement, which may be used as a basis of gauging its three aspects:

1. The earning power of a business in the past as related to the capital invested (net worth).
2. The actual and potential production capacity as represented by the fixed investments in relation to the inventory on hand.
3. The ability of the firm to merchandise its output which is reflected in the volume of business as related to the current assets.

Measures involved.—The first aspect of the productivity of a business has to do with the returns yielded on the net worth which is evidenced by the trend of past net earnings —the earnings left to the owners or stockholders after all necessary deductions from income have been made. This information serves as a measure of returns on owned capital

invested, and its tendency may indicate probable future profits. Whether favorable profits are in sight must be judged on the basis of at least two factors, as indicated by the second and third aspects above, namely, the degree in which fixed investments approach an output commensurate with their capacity, and the ability of the firm to merchandise the output yielded by the fixed investments (plant and equipment). In the first instance, we obtain a measure of earnings on capital invested by owners of the business and, in the second and third instances, we obtain evidence on the probable continuance of earnings yielded by the business in the past and in the present; for the trend of output, and the ability to sell output are primarily responsible for future profits.

Credit ratios as measures of capital productivity.—As we have repeatedly emphasized, the credit man has no time, as a rule, to engage in a detailed investigation, in order that all the facts concerning the financial standing of a firm may be before him. He must usually make the most of what information is at hand. Productivity of the capital invested in a business by the owners is naturally the result of manifold factors operating from without, as well as from within, an enterprise. Profits, though their recognition is simply a matter of dollars and cents, at the end of a period when returns are consolidated, are usually acquired through a complex series of circumstances. As previously stated, the tendency of the rate of past and present earnings on owners' capital, supported by current tendency of output, potential productivity, and sale of products, often give the clue to future returns and the probable productivity of the business.

Ratio of net earnings to net worth.—The credit ratio most serviceable to credit analysis, in providing information on the trend of earnings, is Net Earnings: Net Worth. It is expressed thus:

$$\frac{\text{Net Earnings}}{\text{Net Worth}} \times 100 = \text{Ratio or Percentage.}$$

By net earnings we mean the net income after all items of income have been totaled and after all expenditures have been deducted. In other words, net earnings are strictly that amount which can be added to surplus or paid out in dividends.

The steps in arriving at a firm's income are logically set forth in the "Form for Profit and Loss Account" given on page 140; they are:

Gross profit on sales.

Net profit on sales (a complete cost accounting system would allocate all operating and overhead costs under this head).

Gross income (adding income from other sources).

Net income (deducting other expenses; usually some overhead and general expenses appear under this head).

Adjustment of income through special charges or credits.

Final net earnings of company going to Dividends or Surplus.

The computation of net worth is exactly similar to that given in connection with other ratios that involve this item.

Limitations of ratio for credit purposes.—If the trend of the Net Earnings: Net Worth ratio is determined, it will indicate the degree of financial success achieved by a concern. But, as formerly said, past earnings do not reflect these current factors on which an adequate forecast of the future can be made. Therefore, other ratios must be sought which bridge the time element. For example, a manufacturing concern strikes off a set of financial statements quarterly and reports a certain rate of profit on owned capital invested. Normally, the profits shown in such a quarterly statement—let us say as of March 31, assuming that the firm's turnover or marketing periods cover 60 days—may well have been earned in the two or three preceding months. This would be particularly true of firms whose operations cover many lines and extend to wide and distant markets. Since the credit man is interested primarily in what future earnings will be—for the probability of repaying a loan is, to a large extent, contingent on these earnings—he must seek present indicators of what the future profits are likely to be. Furthermore, the circulation of working capital in and out of a business means that the sum expended should at least be returned. Therefore, productivity from the commercial credit point of view may be taken to mean the return of the sum equivalent to the originally expended sum plus whatever profits have accrued.

Additional ratios necessary.—The two major aspects of business operations being output and sales, evidence of potential productivity must be found in them. This evidence may be fairly well measured by the ratios: Inventory: Fixed Assets, and Net Sales: Current Assets. These ratios furnish indications of future earnings by offering evidence as to whether fixed assets are productive, or potentially productive, and whether the firm can sell its output. Speaking of fixed assets alone, as to productiveness, is futile, for it requires sales and an adequate merchandising policy to market the output, all of which may be estimated with reasonable accuracy by the trend of those proposed ratios. The formulæ for these ratios are:

$$\frac{\text{Inventory}}{\text{Fixed Assets}} \times 100 = \text{Ratio or Percentage.}$$

$$\frac{\text{Net Sales}}{\text{Current Assets}} \times 100 = \text{Ratio or Percentage.}$$

The former ratio shows the extent to which the firm is purchasing for resale, or producing goods, or stocking up inventory in advance of sales; while the latter evidences the rapidity of turnover of the current assets and, therefore, indirectly, the efficiency in selling the output and collecting the proceeds.

Separate ratios for manufacturing concern.—In the case of a manufacturing concern, it would be advisable to separate the inventory items into raw materials and supplies, finished and partly finished articles. Whether such classification is possible depends on the manner in which inventory is presented in the balance sheet. Instead of having one ratio, which would be sufficient in the case of a mercantile house, we would have two, in the case of a manufacturing concern. These ratios would be:

$$\frac{\text{Raw Materials and Supplies}}{\text{Fixed Assets}} \times 100 = \text{Ratio or Percentage.}$$

$$\frac{\text{Unfinished and Finished Goods}}{\text{Fixed Assets}} \times 100 = \text{Ratio or Percentage.}^{*}$$

* If desirable "Unfinished" and "Finished" products might be separated and the ratios developed separately.

From a credit standpoint, the two ratios should support each other. The first ratio should indicate the potential production

capacity of a firm, that is to say, provided additional orders were forthcoming, the firm could fabricate the goods without first having recourse to the raw material market. This ratio must be carefully watched, however, as the close of a prosperity period approaches, in order to obtain clues as to whether an overinventoried condition is developing in raw materials. The second ratio measures the output to fixed assets. But this ratio must be analyzed in conjunction with the Net Sales: Current Assets ratio. Should the latter ratio decline, especially if a more detailed consideration showed also a declining tendency in the Sales: Inventory ratio, the indication would be that fixed assets are producing more inventory than can be worked off in this market. If the reverse tendency is evident, then one or two conditions prevail: fixed assets are not productive, or goods are being sold rapidly and are keeping the plant employed to capacity. Which of these two conditions is most probable might be ascertained with reasonable accuracy by turning to the trend of sales.

Demonstration of meaning of ratios analyzed in combination.—Let us assume that the four ratios above considered manifest the following trends:

		Per Cent 1st Year	*Per Cent 2nd Year*	*Per Cent 3rd Year*
Net Earnings: Net Worth	=	25	12	18
Raw Materials: Fixed Assets	=	20	36	30
Finished and Unfinished Inventory: Fixed Assets	=	30	50	35
Net Sales: Current Assets	=	370	240	260
Net Sales		$125,000	$87,000	$95,000

Having at hand the above trend of ratios, the steps in analysis would be approximately these:

Step 1.—Net Earnings: Net Worth ratio indicated a marked drop in the second year with a slight recovery in the last year—on which the forecast of future earnings hinges.

Step 2.—Raw Materials: Fixed Assets ratio gives evidence that the inventory of raw material was low in the first year of high profit. But it accumulated in the second year, indicating an overinventoried condition in view of declining sales; but this ratio in the current, or third, year indicates a favorable potential capacity to turn out goods under the impetus of forecasting sales. Whether or not the original

cost of raw materials has been brought into alignment with the prevailing current prices of the materials is also an important factor in determining future profits.

Step 3.—Finished and Partly Finished Goods: Fixed Assets ratio shows a situation of overproduction, and a stocking up of merchandise inventory in the second year. The trend of sales implies that fixed assets are not at work to capacity, for goods cannot be worked off in the market. In the third year, however, the favorable raw material position and the reduction of the merchandise inventory show a very favorable tendency. Fixed assets also are gaining in productivity.

Step 4.—Net Sales: Current Assets ratio clearly shows that ability to market merchandise dropped in the second year, but recuperated in the third year, thus supporting further the conclusion that potential productivity is good and a future increase in profits is quite probable. (A closer view of the inventory position could be secured by referring, also, to the Net Sales: Merchandise ratio.)

Additional ratios suggested.—In this connection, reference must be made to other ratios that might be proposed as more or less satisfactory measures of the productivity of capital invested—meaning the productive capacity of fixed assets. Such ratios as Net Sales: Fixed Assets, and Net Sales: Total Capital invested or ratio that involve past earnings—such as Gross Profits: Net Sales, Operating Profits: Net Sales, and these two classes of profits: Net Sales—hardly meet the test of true forecasters as an aid to credit analysis. The Net Sales: Fixed Assets ratio is seriously affected by price changes, since, on the one hand, the valuation of fixed assets is an accounting matter, while, on the other, the price of articles sold is determined by conditions prevailing in the markets. So it invariably happens, since prices rarely remain unchanged, that the ratio rises and falls with price swings; while the physical output of fixed assets remains, to a large extent, static. True, this ratio would be quite accurate in reflecting productivity of fixed assets, provided the physical volume of sales could be obtained, but such information is not often available to the credit man. The other ratio of Net Sales: Total Capital is, indeed, based on too general a conception of turnover to be of much service as an indicator of future earning capital. Similarly, the ratios above suggested, which involve profits

and sales, are more or less ineffective as forecasters. Ratios as indexes of probable earnings should not rest on past profits, but rather on the criteria of potential earning power and, even then, it must be reiterated, the trend of business conditions constitutes a very important element in the analysis.

But, as we have seen, the productivity of capital is necessarily dependent upon the working capital position, or the ability to sell the output and to collect the proceeds. Productivity, from a credit standpoint, must mean potential capacity of fixed assets to produce and potential ability to sell the output and to collect the proceeds and, in order to obtain a glimpse of the future, in profits, the credit man must analyze indicators that have to do with these potential aspects of productivity. We have seen that the trend of actual earnings is an index, not of the future, but of the past; but it might well serve as a jumping-off place where forward-looking indicators begin. We offer the sequence of ratios on pages 281 and 283 as the most practicable and serviceable indexes of future earning power, and, therefore, as the most expedient for the credit man.

Practical Ratio Analysis of Credit Cases.

In the following analysis of the potential productivity of the respective concerns, the viewpoint of the commercial credit man has been adopted. This viewpoint assumes the practical situation in connection with a credit risk, namely, that short-term credits bear some relation to the potential and actual volume of business and to the turnover or marketing period of the various enterprises. The repayment of commercial loans, or payment for goods purchased on time, is, indeed, related to these factors from the standpoint of the availability of funds. Productivity, as thought of in the following discussion, therefore, takes on a specific credit meaning. The credit man is satisfied if payment is made at maturity. This might be accomplished by the debtor if his income is equivalent to the original outlay, even if no profits accrue to him. Of course, if profits are made, and if they increase, the ability of the debtor to pay is considerably augmented. On the other hand, an unprofitable business cannot long exist, and constitutes, naturally, a poor credit risk.

Besides the ratios above discussed, which are used to measure potential productivity, recourse is also had to the ratios of Net Sales: Receivables; Net Sales: Merchandise; and Merchandise: Receivables. These might be availed of in conjunction with the Net Sales: Current Assets ratio as a measure of the activity in working capital. The ratio of Inventories: Fixed Assets, as we have seen, evidences the activity or potential activity of the plant. The steps in the use of these ratios begin with the earnings on net worth, then pass to the activity or potential activity of the plant and end with the activity of the current assets.

POTENTIAL PRODUCTIVITY OF THE CAPITAL AND ASSETS OF THE DEPARTMENT STORE

Credit Ratios	*Ratios in Percentages*									
	1914	*1915*	*1916*	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Net Earnings: Net Worth ..	0	9.8	6.2	11.5	6.2	10.2	19.1	1.9	2.5	4.8
Inventory: Fixed Assets.	232	267	324	453	223	224	.230	216	189	214
Net Sales: Current Assets ..	0	244	241	200	183	198	258	314	327	307
Merchandise: Receivables...	83	102	115	121	184	196	153	141	131	127
Net Sales: Receivables	0	504	523	531	530	633	687	778	770	715
Net Sales: Merchandise	0	493	456	439	287	322	449	552	589	563

Although this store was relying somewhat heavily on borrowed short-time funds and had augmented the fixed assets, its management of working capital was very good. In 1923, however, the ratios concerned with the current operations reacted from the improvement shown in the two previous years. Still, the position assumed at the close of the period represented a considerable advance over that which prevailed before 1921.

Analysis of store's ratios.—The rate of profits on the net worth seems favorable from 1915 to 1919, while, in 1920, the profits appeared enormous.[1] In 1921, the year of business depression, heavy inroads on the margin of profits was felt.

[1] The profits of this store are quite large if compared with the average rate of profits of the large number of mercantile houses as compiled by the Harvard Research Bureau and the Northwestern University Research Bureau from 1915 to 1919.

In that year the sales had been heavier than ever before, and the merchandise and receivables turnover made a rapid increase; but it seems that the sales had been forced. Evidently, the store staged many bargain days in which to unload its heavy stocks of goods. The moderate recovery of profits in 1922 and 1923 indicated that liquidation had been completed, but it also indicated that profit margins remained narrow. The heavy increase in fixed assets previously mentioned is reflected in the Inventory: Fixed Assets ratio, in the later years. But the activity in the current assets showed animation, a circumstance corroborated by the turnover rate of the merchandise and receivables.

Current tendency of productiveness.—This survey of the analytical ratios of the past years serves to bring to light the current tendency, that is to say, in 1923. The improvement in sales was moderate, but the 1923 sales total larger than hitherto. The rate of earning on net worth in 1923 doubled that of 1922. The increase in fixed charges, as a result of the fixed expansion, very likely had something to do with keeping the net profits a little lower than they otherwise might have been. The growth in sales points to a possible absorption of the increased store facilities in a not far distant future. The tendency of the net earnings in 1923 indicates a favorable degree of productivity.

The volume of merchandise handled, in relation to the fixed investments, improved in 1923, since the stocks carried exceeded any previous yearly total. This proves that store facilities, including the more or less permanent salaried personnel, are being more completely utilized, thereby rendering the fixed investments and permanent expenses more productive. The activity of the current assets dropped somewhat. However, their rate of turnover had not fallen so much below the figures of the two preceding years. A further examination of the composition of the current assets indicates that the store had greatly increased both receivables and merchandise stocks—the proportional increase of the former was, however, relatively larger than that of the latter. This is demonstrated by the Merchandise: Receivables ratio. The collectibility of receivables and the salability of merchandise corresponded to the retardation exhibited by the Net Sales: Current Assets ratio.

Basis for final judgment.—From the above analysis the potential productivity of the concern might be evaluated as follows: Its trend of earnings on owners' capital has improved; the marked increase of receivables indicates potential profits earned which will mature with collection; the increase in inventory was moderate and perhaps justified by the increase in sales; the activity of the current assets, however, points to a possible slowing up, which, nevertheless, should not be interpreted as unfavorable in the light of the seeming freshness and moderate stocks of merchandise. Much depends upon the future trend of the consumers' demand, which, in turn, is tied up with trend of general business conditions, and upon the influence of these on the industries, within the environs of this store, from which the customers obtain their income. Material and data concerning this aspect of the problem are systematically published in the Federal Reserve *Bulletin*, Federal Reserve Banks' *Monthly Business Reviews*, *Commercial and Financial Chronicle*, and various other publications. Such an analysis is a necessary adjunct to the interpretation of the credit ratios indicating potential productivity of capital and assets of business concerns.

POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS OF THE WHOLESALE HARDWARE CONCERN

	-Ratios in Percentages-					
Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Net Earnings: Net Worth...	8.4	5.2	4.9	—0.7	—0.2	—0.7
Inventory: Fixed Assets	257	201	204	92	107	133
Net Sales: Current Assets...	254	281	223	215	200	144
Merchandise: Receivables ..	211	138	159	79	94	118
Net Sales: Receivables	836	744	628	432	407	328
Net Sales: Merchandise	396	537	394	545	430	278

Previous ratios showed unfavorable position.—The unfavorable capital position and financial performance evidenced by this wholesale hardware concern has been demonstrated in the three preceding chapters. It was running deeply into debt, and its current business remained stagnant. We had come to the conclusion that something would have to be done, in order to rescue the firm from the slough of financial despair. One road to improvement would lie in the direction of an increased investment by the stockholders, another in the direc-

tion of a reorganization and scaling down of the indebtedness, while a third might lead along the lines of self-help, and recovery through efficient and economical management of its financial and business affairs, in order to reëstablish financial control. The extent to which the first or the last is possible depends, naturally, on the productivity of the capital and assets, in the immediate future. Immediate productivity would reassure the present owners and make an additional investment seem worth while, not only for the purpose of saving part, or possibly all, of their already invested funds, but also with the object of making the firm over into a productive enterprise. What chances there are for this outcome must be gleaned from the following ratio analysis. Although this may be somewhat apart from the present and immediate future credit position of the firm, it is, nevertheless, related thereto.

Analysis of productivity ratios.—The company evidently began to decline in its earning power from the beginning of the period, no doubt a result of its unprofitable sales. Since 1920, it operated at a loss. The enormous stocks of inventory were piled up at the fatal moment when the peak of prosperity had been passed, and when the agricultural communities had slid into the slough of depression. The unjustifiable expansion in inventory, in the period from 1920 to the end of 1923, together with the large volume of "frozen" receivables, played havoc with the firm's finances. The inactive working capital thereby produced increased the costs of the inventory and reduced the profits in the receivables. The sales did not warrant such a policy. The losses incurred during this period clearly reflect the conditions described.

It must be granted that the losses were not unduly heavy, since they kept within 1 per cent of the net worth. The reduction in net worth was, therefore, not large. The enormous increase in indebtedness must be laid, first, to the unwarranted current expansion, as well as the moderate fixed expansion; and, second, to the acute decline in the activity of the invested capital. This increased debt, as previously indicated, not only jeopardized financial control, but also augmented the interest charges against income. Turning now to the prospects of productivity in the future, we find the basis of analysis in the tendencies evident in 1923.

Prospects shown by ratios.—The loss incurred in 1923 came about with a rising proportion between inventory and fixed assets. This should place the concern in a potentially favorable position, if its sales were to increase. Since the trend of cost prices was low but tending upward, the resale might be conducted on the basis of rising selling prices. In such a case, the firm might more than offset the additional costs incurred by its inventory policy in 1923. The progressive decline in the Net Sales: Current ratio throughout the entire period, and the acute drop witnessed in 1923, however, bode ill. A closer analysis of the turnover of the receivables and merchandise reveals a decided tendency toward stagnation. The receivables behave less favorably than merchandise, since the company seems to have been collecting overdue accounts; but the receivables bulk smaller in the current assets relative to merchandise.

Again, the trend in the markets will have an important bearing on the outlook for this hardware company; but the ratios just analyzed hold out a very poor inducement to the stockholders and, of course, less to the present or prospective creditors.

POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS OF THE WHOLESALE GROCERY CONCERN

	-*Ratios in Percentages*-					
Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Net Earnings: Net Worth...	19.9	21.4	21.5	2.7	1.5	14.4
Inventory: Fixed Assets	378	407	337	245	235	234
Net Sales: Current Assets...	300	277	361	321	297	336
Merchandise: Receivables ..	181	167	140	129	131	139
Net Sales: Receivables	899	796	929	794	737	861
Net Sales: Merchandise	496	475	664	615	560	618

Earlier analysis proved favorable.—This wholesale grocery concern presented sound methods of finance, sound composition of assets, and sound position of working capital. The trend of the ratios in the previous analysis showed only that this firm, like all business, felt the blighting influence of the depression, after 1920. But the reaction found this company's house in order and, therefore, produced no other effects than an inevitable reduction in sales for 1921 and 1922. This, however, did not weaken the financial strength of the concern.

Ratios of potential earning power examined.—Proceeding now to the inquiry into potential earning power, the firm showed a remarkably high rate of profits in the first three years of the period. The percentage of net profits on sales, of 43 wholesale grocery concerns, from 1916 to 1920, published in the *Harvard Review of Economic Statistics*, October, 1921, as compared with those of this company, were as follows:

	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*
	1916	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
43 Firms	3.3	4.2	2.1	2.2	—0.8	——No data——		
This Firm	No data		4.7	5.0	4.0	0.7	0.4	3.5

These figures show that the wholesale grocery company was a high profit producer. The earnings in 1921 and 1922 were not at all gratifying, although they increased markedly in 1923.

It is interesting to note that the trend of the net earnings on net worth, as well as net earnings on net sales ratio, runs nearly parallel with the activity in the company's current assets. The Inventory: Fixed Assets ratio, in 1923, remained at the level attained in the previous year. This points to a favorable and also to an unfavorable condition: first, the favorable indications are that the firm is not speculating in inventory by stocking up; second, the unfavorable indications are that the firm must provide for the fixed carrying charges out of the profits on a smaller inventory volume, in relation to the fixed assets. The hand-to-mouth buying policy that the firm evidently assumed must be regarded as sound and conservative, as compared with a possible one of advanced purchasing which it might have assumed in order to take advantage of wider speculative profit margins. The sound and profitable inventory policy adopted by the concern in 1919 and 1920 instills confidence in its policy in 1923.

Current tendency of earning power.—That the firm's smaller inventory in relation to fixed assets may be construed as favorable receives further support in the trend of the turnover of the current assets. At the close of 1923, the upward turn in the ratio of Net Sales: Current Assets is commensurate with the favorable and profitable position of this ratio

in 1920. The separate ratios of Net Sales: Receivables, and Net Sales: Merchandise point to a marked degree of liquidity in these major current assets. Already conservative in its inventory policy, the firm is at the same time reducing the credit sales, or shortening the credit term on the sales. It is clear that this company is deliberately following a hand-to-mouth buying policy—a quick turnover of its stocks, and rapid collections. This policy has been conducive to very good profits in 1923. Finally, the company is not indulging in commitments that might spell losses in the indeterminate state of business conditions prevailing at that time. The indications for a profitable future are strong with respect to the efficient management of the affairs of the company.

POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS OF THE SHOE MANUFACTURING CONCERN

	-Ratios in Percentages-					
Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Net Earnings: Net Worth...	14.4	18.9	10.1	Loss	1.9	16.1
Inventory: Fixed Assets	533	722	565	363	399	414
Net Sales: Current Assets...	223	171	207	182	187	202
Merchandise: Receivables ...	143	153	92	77	83	92
Net Sales: Receivables	561	445	419	340	367	407
Net Sales: Merchandise	391	290	453	441	444	443

Nature of concern's charges against income.—The reliance of this manufacturing concern on short-term obligations seemed less unfavorable, when it was found that the use to which the invested capital was put suggested a good financial structure. Moreover, its management of working capital was quite efficient. The reasons for the provision of borrowed funds by means of current obligations can be adequately explained on the basis of the practice of leasing the machinery prevailing in the shoe industry. Although this practice reduces the amount of fixed assets owned by shoe manufacturers, and, as we have seen, restricts, therefore, the basis for long-term borrowing, it nevertheless does not relieve these concerns from the necessity of meeting a charge against income, approximately equal to that carried by concerns who own their machinery, since, in principle, rentals paid by the shoe concerns are the same as the interest charges and actual depreciation, maintenance, insurance, etc., paid by those firms which own part or all of their equipment.

Trend of past earnings.—The Net Earnings: Net Worth ratio varied greatly as it did in the case of the wholesale grocery concern. The peak of profits was reached by the shoe firm in 1919. A problem involving future probabilities can be best approached by comparing the present conditions of the problem with similar situations experienced in the past. In this respect, the trend of the ratio from 1918 to 1919 might afford a set of conditions predicating the increase, similar to those that existed in 1923. It seems, however, that, in the former period, only the Inventory: Fixed Assets ratio showed better position in 1919. But, the downward trend of the three turnover ratios must be explained by the heavy accumulation of stocks and receivables. The strong sellers' markets then prevailing made it possible for the firm to earn excellent profits and at the same time to accumulate stocks and receivables. This policy, under such conditions, could be carried to the point where credit would be no longer obtainable, or where the sellers' market would turn into a buyers' market. The firm attempted to work off its large supply of inventory in 1920, and much of it was sold on credit, to which the increase in receivables is witness. It was not able, however, to find a sufficiently resilient market, and, consequently, losses had to be taken during the depression of 1921. Unfortunately, it was impossible to obtain separate figures for raw materials and finished products; therefore, it is impossible to determine the cause for the losses—whether due to the acquisition of high-priced raw materials in the boom period, or to the high manufacturing costs which later forced the firm to sell the finished products below costs on a declining market, in 1921. The recovery in 1922, showing a small profit, occurred while all the above ratios were tending upward.

Indications of future earnings.—In 1923, the gratifying increase of the Net Earnings on Net Worth seems to indicate that the firm has struck the stride it took before the depression. Let us see whether the trend of the other supporting ratios warrant an optimistic belief in the company's potential productivity. Beginning with the Inventory: Fixed Assets ratio, it becomes evident that, in spite of the increase in fixed assets during the year, the volume of inventory increased more. This would place the firm in a strategical position in case of the possible further development of a sellers' market. In

other words, it would have goods ready to sell, produced at a lower cost than would perhaps be possible later on. Whether the expectation of greater activity is well founded, the trend of the Net Sales: Current Assets ratio should indicate. This ratio, as a matter of fact, does justify the belief that at least a temporary continuance of the current activity may be expected, if not a greater one.

Contrary to the conditions that prevailed in 1918-1919, the firm does not seem to be accumulating inventory or receivables during 1923. The greater volume of merchandise carried, and the rising proportion of this volume, in relation to fixed assets and receivables, is well supported by the continuance of the former favorable turnover of merchandise, indicating that the company's products are retaining their salability. The trend of the Net Sales: Receivables in 1923 shows a good improvement in the firm's collections. This fosters the belief that the products are not shoved in the market on longer credit terms.

Although this company does not measure up to the wholesale grocery company, in point of prospect, it does, however, give indications of a good potential earning capacity. A slight doubt exists as to its prospects, because of the lag manifested in the trend of the inventory turnover, especially in view of the declining leather market at the time.

POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS OF THE SILK MANUFACTURING CONCERN

Credit Ratios	*-Ratios in Percentages-*								
	1918	*1919*	*1920*	*—1921—*		*—1922—*		*—1923—*	
				7/2	12/31	7/1	12/31	6/31	12/31
Net Earnings : Net Worth	14.4	22.5	.8	13.7	11.5	4.6	11.4	7.2	2.4
Finished and Partly Finished Inventory : Fixed Assets	11	41	51	58	48	29	41	32	30
Raw Materials Inventory : Fixed Assets	44	52	32	27	66	24	36	15	45
Net Sales : Current Assets	191	134	226	163	194	125	123	133	76
Merchandise : Receivables	147	108	174	111	163	93	112	91	254
Net Sales : Receivables	514	291	659	365	538	256	271	266	279
Net Sales : Merchandise	349	369	379	327	329	274	241	293	110

Condition previously found.—The foregoing analysis of the credit ratios of this company clearly indicated that this firm had got into some difficulties in 1923. The sound policy of financing by means of owners' capital that obtained for the greater part of the period was met by liberal expansion in 1922 and 1923. This excessive expansion tied up the firm's capital and rendered it unproductive. The resulting appeal to the investment market had as its motive partly the funding of the heavy current indebtedness, and partly the unwarranted increase in fixed assets in 1923. The effect of these policies on the financial position of the firm was exceedingly unwholesome. The working capital of the firm had seriously diminished in efficiency at the end of the period. The supply was still large, but the turnover—the acid test of its productiveness—was badly impaired. It remains now to be seen what facts the analysis of the present ratios bring out with reference to its future earning capacity. Fortunately, we have, in this connection, the aid of a differentiated inventory account, so that the inventory policy, with respect to raw materials and to finished and partly finished products, can be separately evaluated.

Analysis of past trend of ratios.—The earnings on the concern's net worth have been quite variable. With the exception of 1920, the rate obtained in 1923 was the lowest during the six years. This fluctuating ratio can be attributed partly to the variations in Net Worth—although this does not seem to be a consistent explanation—and partly to the fluctuating prices generally prevailing for raw silk, and the unstable demand for silk products. The latter seems more probable, as a cause, than the changes in the supply of owner's capital. This absence of gradual change in the rate of earnings made a forecast of prospective profits, on the basis of past variations, rather hazardous. The attempt might be made, however, to discover symptoms of earning capacity in the trend of the supporting ratios which we believe to possess the qualities of indicating potential productivity.

The periods when a decline in the Net Earnings: Net Worth occurred were the year 1920, the middle of the years 1922 and 1923, and the end of 1923. At these times the ratio of Finished and Partly Finished Inventory: Fixed Assets had increased once, and decreased thrice. But, in all cases, it had

been high before the drop in earnings ensued. The ratio of Raw Materials: Fixed Assets dropped heavily in each respective period, with the exception of the last half of 1923. This would go to show that stocking up in both types of inventory preceded a drop in earnings. There is evidence, however, that, in the middle of the years 1922 and 1923, the heavy increases in fixed assets played their part in producing the decline in these ratios, and that the increase in fixed charges reduced the net income. Further information which will have a bearing on the position of inventories preceding the drop in earnings must be obtained from the trend of activity in the current assets. The Net Sales: Current Assets ratio increases and decreases twice. It, therefore, offers little evidence for the problem. The Merchandise: Receivables ratio behaved likewise, and the same is true of the Net Sales: Receivables and Net Sales: Merchandise ratios, this behavior supporting the trend of the Net Sales: Current Assets ratio.

Let us now examine the trend of these respective ratios in the periods when the net earnings increased. There were three times when this occurred—1919, middle of 1921, and end of 1922. The Finished and Partly Finished Inventory: Fixed Assets ratio increased in all three periods. The ratio of Raw Materials: Fixed Assets increased twice and declined once. The Net Sales: Current Assets proportion diminished, curiously enough, in each period. The ratio of Merchandise: Receivables dropped heavily twice, and mildly increased once, indicating that, when merchandise was sold for receivables, the profits came into evidence. The turnover of receivables corresponds to the movement of this ratio, while the turnover of merchandise increased in the first and decreased in the second and third periods. Evidently, the policies pursued by this firm in managing the current assets have been too inconsistent, and, therefore, no definite conclusions can be gathered from the behavior of the ratios in relation to the trend of net earnings. This much is clear, however, that a decline in net income is often preceded by high inventories, raw, finished, and in process. Expanding inventories were also in evidence as earnings increased. This much presents a very normal course of business conduct.

Future prospects indicated by ratios.—Proceeding now with the analysis of the ratios indicating the potential produc-

tive capacity of the firm at the end of 1923, certain special features are in evidence. The rate of net earnings had continued to decline since the end of 1922. The enormous increase in fixed assets had not deterred the company in laying up a heavy supply of raw materials; in fact, it seems to have stimulated the executives into believing that, possessing more plant facilities, all that was necessary was to furnish the raw materials. The sales surely indicated no disposition to increase with the enormous expansion since 1921. The finished and partly finished products maintained a high level in face of diminishing sales. Receivables have been pressed for collection or sold in 1923. The acute drop in the turnover of merchandise indicates danger ahead. The carrying of the large supplies of raw materials is not justified in view of the downward trend of prices at the time. This speculation in inventory came with rapidly declining sales in the last part of 1923. The expenses that will be incurred in carrying the inventory and the heavy increase in fixed charges against income, resulting from the excessive plant expansion, as well as the almost certain losses to be sustained on the high inventories, do not afford a bright outlook for future profits.

POTENTIAL PRODUCTIVITY OF CAPITAL AND ASSETS OF THE TWO SPECIALTY METAL MANUFACTURING CONCERNS

Company 1	*Ratios in Percentages*					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Credit Ratios:						
Net Earnings: Net Worth.	35	36	33	11	16	23
Inventory: Fixed Assets *.	61	77	62	67	50	42
Net Sales: Current Assets.	235	239	270	255	278	299
Merchandise : Receivables	114	122	111	91	93	69
Net Sales: Receivables ...	531	561	605	519	575	540
Net Sales: Merchandise ..	464	458	542	565	616	779

Company 2	*Ratios in Percentages*					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Credit Ratios:						
Earnings: Net Worth	48	44	48	9.6	4.7	— 3.6
Inventory: Fixed Assets*..	55	92	102	82	66	63
Net Sales: Current Assets..	267	231	245	244	205	208
Merchandise : Receivables	53	71	97	109	122	142
Net Sales: Receivables ...	432	415	508	537	480	530
Net Sales: Merchandise ..	805	582	520	589	393	362

* No separate figures for raw materials, and for partly and completely finished products are available.

Review of previous analysis.—The financial set-up and performance of Co. 1 evidenced a financially sound and well managed company. In comparison, that of Co. 2 evinced a very poor condition. The latter company showed symptoms of too rapid growth and seemed to be caught with a top-heavy debt resting on a weakening business basis. Nothing short of a fundamental change in financial and business policy will stave off a reorganization of this firm. A change in policy requires that the disease of nonproductivity has not eaten too far into its finances, that is, the balance of outgo and income must not have been distorted beyond restoration by the ordinary means available, without passing through a receivership. The policies of Co. 1 might throw considerable light on the mismanagement of Co. 2 with respect to the comparative productiveness of the capital invested in each.

Companies' earnings compared.—The Net Earnings on Net Worth for Co. 1 indicate a profitable business. The depression of 1921, although of considerable influence, left the company with a good return on its capital. The recovery in the income to the end of 1923 was indeed gratifying, and compared quite favorably with that of the boom years up to 1920. Furthermore, it must be remembered that the firm retired its funded debt, bit by bit, during the period, until the debt was completely wiped out by the end of 1923. In addition, the company was able to earn a very good rate of return on a large and increasing proportion of owners' capital. Comparing this record with that of Co. 2, a different fortune is discernible. The high rate of net earnings on its owned capital during the first three years shows an excellent productivity of the owners' capital. It must be emphasized, however, that this higher rate of income is on a considerably lower Net Worth: Total Debt ratio than that which obtained for Co. 1. That the comparative rates of earnings on Net Worth do Co. 1 an injustice may be seen by the absolute earnings in dollars, which show that Co. 2's earnings in those years were not so much larger as the comparative rates on Net Worth would lead one to believe. The story told by the trend of the Net Earnings: Net Worth ratio during the last three years is patent on the surface. Co. 2 ends with a 3.6 per cent loss, while Co. 1 finishes with a rather large gain of 23 per cent. This happened in conjunction with a fairly

comparable total capital investment and growth in Net Sales; but with a Worth: Debt ratio of 65 per cent and 284 per cent, respectively. Heavy fixed charges due to overexpansion and top-heavy indebtedness, together with the more slowly moving merchandise, were chiefly accountable for the financial results of Co. 2.

Comparative analysis of ratios indicating future returns.—The trend of past and 1923 net earnings places Co. 2 in a bad light and Co. 1 in a good one. The indeterminate course of general business conditions, during 1921, 1922, and 1923, instilled cautiousness in the minds of the executives of Co. 1. They kept the control of the company well in hand by not speculating in inventories nor engaging in any risky commitments, not even expanding the fixed assets when the course of sales seemed to justify an increase. The ratio of Inventory: Fixed Assets declined in the last three years, but if this is considered in conjunction with the three turnover ratios, namely, those of Current Assets, Receivables, and Merchandise, it becomes quite evident that the company is practicing a sound and profitable policy of quick turnover of its current assets. In this policy the receivables did not join, but their liquidity remained very good. The large sales in 1923, produced by a rapid turnover of merchandise and working capital, yielded excellent returns, while the indeterminate state of business at the time justified the cautious inventory policy. The potential position of the company to earn profits in the ensuing year must be regarded as very good from two angles: (1) that of the extraordinary salability of its products; and (2) that of its excellent preparedness for continuing on a profitable basis, even though a reaction in business conditions should occur in the near future.

On the other hand, symptoms of a weakening control over the productiveness of the capital and assets of Co. 2 are marked. The rapidly increased fixed assets bear a much smaller proportion to the inventory carried than they did for Co. 1. The larger plant facilities of Co. 2 are made to put out goods at an increasing rate in the face of a rapidly declining inventory turnover. Since these two companies show a similar line of items produced, the extraordinary inefficiency of the working capital of Co. 2 was quite evident. The enlarged plant seemingly became the source of heavier expenses,

while the speculation in inventory, or the poor salability of the products, ate further into the gross profits of the company. The increasing debt burden in 1923 was the result of both excessive expansion and increasing costs. The additional policy of tying up working capital in unproductive fixed assets will meet its inevitable results. The conclusion can be drawn, that the indications of prospective profits for Co. 2 are very poor. Unless greater efficiency appears in the merchandising end of the business and unless expansion is stopped further losses are in prospect.

Recapitulation.—

A. Department Store—Ratios support a faith in the continuance of good earnings.
B. Wholesale Hardware—Ratios evidence utmost pessimism.
C. Wholesale Grocery—Ratios indicate good profits to come.
D. Shoe Manufacturing—Ratios justify a belief in reasonable profits.
E. Silk Manufacturing—Ratios afford no bright outlook.
F. Co. 1 Manufacturing—Ratios show that future profits are insured.
G. Co. 2 Manufacturing—Ratios point to further losses.

References.

Bliss, "Financial and Operating Ratios in Management," Chapters vii, viii, x, xi, xx, xxxi, xxxii.

CHAPTER XI

CREDIT RATIO ANALYSIS OF THE FIFTH FACTOR IN CREDIT; THE RATE OF FIXED EXPANSION

Significant features of a concern's growth.—Evidences of growth or expansion are, naturally, the test of a concern's potential earning capacity, and constitute the immediate aim in partly determining its credit worth. A firm that is highly productive can afford to expand its organization, while a firm whose income is low or moderate must generally conserve its resources. It must be observed that no general statements as to when, and to what extent, a firm should expand, would be of value. Promotion carries with it, oftentimes, expectations as indefinite as are the variable results achieved in terms of actual yield. It is true, of course, that every enterprise has, as a rule, at least three distinct stages of growth: (1) experimentation, and seeking for various markets; (2) rapid utilization of discovered opportunities in the earlier stage; and (3) attainment of complete orientation with reference to the economic order, and to the laws of normal growth—these being largely dependent, of course, on the normal development of consumers' wants, and so on. Without a recognition of these characteristic phases of development as a basis, judgment of a firm's expansion policy might greatly err. But there are additional considerations that govern a firm's expansion which are subject to no law except the circumstances governing a particular business. It is often true that some concerns are unprofitable or moderately profitable, regardless of whether they have attained a matured status. Again, profits might differ for the separate enterprises, in the various stages of development. Some plants cannot expand beyond a certain limit, for example, many small retail houses, without reducing their profitableness, while others have unlimited fields, especially if development is accompanied by consolidations or integrations which eliminate competitors.

Obviously a business that yields good profits must have found the point of expansion at which it becomes most profitable, and where further expansion would mean decreasing returns; just as a business whose income was poor improved its position by expanding to its most profitable point.

Credit man's point of view on expansion.—From the standpoint of credit analysis, however, the issue is not when or how much a firm should expand. Rather, the question the credit man asks is—granted a firm is expanding—"Is such expansion warranted in view of past financial results achieved and of probable returns in the future?" Being interested in short-term credits, rather than in investment credit, he cannot judge, from the financial statements before him, whether an expansion undertaken is advisable, for the factors to be taken into account in such an evaluation would extend too far into the future. Expansion is a long-time financial proposition and its potential profitableness is latent in future business conditions, which are an unknown quantity. Therefore, the commercial credit investigator regards expansion and expansion programs from the standpoint of how such expansion may affect a firm's more immediate and short-time credit position. Is a firm jeopardizing its working capital position or its earning power by the increased charges incurred through fixed expansion, or is it not? Is the expansion commensurate with the rate of growth in volume of business in the past and in the present? Will the expansion be a profitable undertaking in the near future, so that the financial burden will not be felt unduly by present resources, upon which the efficiency of the present unit depends? These are the more immediate central questions around which the credit man's inquiry revolves. So, then, our fifth and last main credit factor is concerned with the following conditions in a concern:

1. The rate of fixed expansion in relation to the normal growth in the volume of business or sales.
2. The source of capital used to finance the expansion.
3. The effect of expansion on the present and probable future financial resources of the firm.

Difficulties in determining correct rate of expansion.—From a series of financial statements, together with the sales

figures, the relation of fixed expansion to the volume of business can be readily and adequately determined. The most accurate means of presenting this relationship would be by obtaining the volume of sales in terms of physical units, rather than in terms of sales price and the fixed assets in terms of production capacity, according to units per period of production. But such data is not always available to the credit man; and, in such a case, the sales must be taken in terms of selling or cost price, and the fixed assets according to the inventoried valuation. It must be emphasized in this connection that time is very important in this relationship. Fixed expansion is naturally undertaken with the aim to provide additional production capacity over a long period in the future, and this expansion, as a rule, requires considerable time between its inception and its completion. It, therefore, bears a peculiar relation to the short-time credit risks. Since, furthermore, fixed expansion must be justified, not on the basis of earnings, solely, but also on the basis of growth in the volume of business transacted, it must take into account the probable future growth of volume of sales. If this is done, continual pitfalls are encountered in differentiating between the cyclical spurts in demand, as reflected in temporary rise in sales during a prosperity era, and the more or less normal increase in volume of business over a period of years which takes in several business cycles. In view of these difficulties, it will be quite apparent that, as a proper measure of the relationship between the growth of a business and the adequate provisions made to meet the requirements for additional capacity, both of which cannot be regarded from any other standpoint than the standpoint of their long-time significance, the more or less temporary or momentary relationship between growth of sales and expansion must be exceedingly unsatisfactory. The attempt often made to base judgment upon the temporary trend of the relationship between sales and fixed investments as to the correctness of a firm's rate of expansion must be regarded as ineffectual. Such a test would yield results, for example, during the acute prosperity era of 1916-1920, but would be woefully misleading during the depression of 1920 to 1922. The expansion of a given concern, in the former period, might have been scarcely adequate to keep up with sales; yet, in the subsequent period, idle fixed assets would have branded this

heretofore inadequate rate of expansion as too great. The effect on the financial position of the concern is plainly evident in both instances, and these effects would have been present in some degree, regardless of the sources from which capital was obtained for expansion purposes, though the severity would have differed according to the manner in which it was obtained. From the commercial credit point of view, therefore, we are concerned with two long-time factors and their short-time effects.

Procedure to overcome difficulties in measuring expansion.—As previously stated, considering the difficulty confronting a credit man in obtaining desirable data, growth in fixed assets can best be measured by securing the amount of increase in capacity in the form of physical units, and the volume of business in physical units instead of in terms of price. But a firm producing and selling many lines, whose capacity is too variable, being conditioned by overtime and speeding-up measures, does not offer an unchanging basis of physical units, either as criteria of capacity or of volume of business. As far as fixed assets are concerned, it seems at least quite probable that in a good many instances the dollar measure is after all a tolerable standard, over a period of time, for, while overtime and speeding-up activities actually change capacity, they would probably have no effect on the inventory valuation of the fixed investment. In the case of volume of business done, or sales, the case appears somewhat different, since sales prices vary, sometimes greatly, with marketing conditions, while the physical volume of goods sold may remain the same. Two alternative procedures may be followed in overcoming the difficulties of finding an adequate measure of trend of sales. One is to find an approximate trend of quantity of goods sold, by dividing the index number of actual sales by the index number of the price of goods sold. This method aims at results similar to those obtained by dividing the index of bank clearings of the United States by the index of general wholesale prices, in order to determine the volume of trade for the country as a whole. The second procedure is to take the actual sales figures as a basis for calculating a chain index number or for fitting a straight or curved line to the actual figures, the aim in either case being to derive the normal growth of sales volume. The effect of short-time price changes on the pecu-

niary volume of sales would be entirely eliminated by the latter method, but the effect of long-time price changes would be present to their fullest extent. However, this would not be so serious a consideration in the case of determining the fixed assets, since one could assume that similar changes would be reflected in the inventory valuation of the fixed assets.

Methods of finding normal sales growth.—In order, then, to obtain a tolerable measure of the rate of fixed expansion, keeping constantly in mind the limitations under which the credit man labors in procuring business data, the relation between volume of business done and the growth in fixed assets must be determined; and this can be done best by arriving at the figures representing the inventory valuation of fixed assets and the figures for growth in the volume of business transacted, these being obtained by graphing (or drawing) a line through the sales figures for a period of years, leaving approximately equal areas below and above the line; these areas would represent spurts in sales in prosperity periods, and drops in sales in depression periods, and the line would, therefore, represent the normal growth in volume of business. Various scientific methods for finding the normal line of growth are in use.[1] More will be said concerning these in the following pages.

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[1] The methods for finding the secular or normal, as well as the seasonal and cyclical, trends in a firm's sales are well defined by Lincoln W. Hall in the following:

The secular trend is usually found by fitting a straight line through the data. A straight line has an equation of the form $y = mx + b$, where y is the obtained secular trend, x is the element of time, and m and b are calculated constants. In order to calculate m and b, the following formulas are used:

$$m = \frac{n + 1\,\Sigma(a_i s_i) \quad - \Sigma a_i \, \Sigma s_i}{\qquad\qquad\qquad\qquad\qquad\qquad}$$

In these formulas s is the item of original data; a is the corresponding element of time; n is the last element of time, and i represents any element from o to n. Time should be counted from o to n, so that if we had three years of quarterly data, the first quarter of the year would be counted 0, the second quarter 1, the first quarter of the third year 8, and so on until the fourth quarter of the third year which would be 11 or n. In the above formula, the expression $\Sigma(a_i s_i)$ means $(a_o s_o + a_i s_i + a_2 s_2 \ldots\ldots\ldots a_\eta s_\eta)$,

Expansion and capital structure.—After the rate of fixed expansion has been determined, the source from which capital

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while Σa_i^2 means $(a_0^2 + a_1^2 + a_2^2 \ldots\ldots\ldots a_n^2)$, and so on for the remainder of the expressions.

In the illustrative data attached, which represents nineteen years of quarterly data, the constants m and b for the first twelve years are found to be -430.6 and $+41748$, respectively, so that the equation of secular trend is $y = 430.6 + 41748$. In order to find the individual items of secular trend, substitute in this equation the various values of x, which is the counting of time the same as a in the above formulas. For example, for the first quarter of the first year x is o, and substituting this value of x in the equation y 41748; for the second quarter x is 1 and y 41318, and so on until all the elements of secular trend are calculated.

The elimination of the secular trend so found is secured by subtracting the element of secular trend from the corresponding element of original data. For example, the original data for the first quarter of the first year is 35721, while the secular trend we found to be 41748, therefore, subtracting 41748 from 35721 we get -6027 which is the residual or the original data with the secular trend eliminated. This process is continued until the secular trend is eliminated from all the original data.

Seasonal Variation.

When we eliminated the secular trend from the original data, we found a new series of data called the residual to take the place of the original data. These residuals contain the seasonal variations and cyclical fluctuations of the original data. In order to find the seasonal variation, the residuals are first made a percentage of the secular trend by dividing the residual element by the corresponding element of secular trend. The residual for the first quarter of the first year is -6027 while the corresponding element of secular trend is 41748, then dividing -6027 by 41748 gives the relative residual -14.4 per cent. This process is continued until all the residuals are turned into relative residuals. The seasonal variation is then obtained by taking an arithmetic average of the relative residuals for each quarter. Since there are four quarters in each year, there will be four seasonal indices. In the appended data all the first quarter relative residuals are added together (negative residuals offset positive residuals) and the total is divided by 12, the number of the residuals added, and the result is $+6.2$ per cent, the seasonal variation for all the first quarters. This process is repeated for the other three quarters so that there are finally four indices of seasonal variation.

Cyclical Fluctuation.

We have now relative residuals, which contain both seasonal and cyclical fluctuation, also relative indices of seasonal variation. Therefore, in order to obtain relative indices of cyclical fluctuation we subtract the relative seasonal variation from the relative residuals. The relative residual for the first quarter of the first year is -14.4 per cent, while the seasonal variation is $+6.2$, therefore the cyclical fluctuation is $+6.2$ per cent subtracted from -14.4 per cent or -20.6 per cent.

The following data may represent the sales of a company whose secular, seasonal and cyclical trends have been calculated (the secular trend in this instance is downward).

has been acquired for that expansion is of great significance, whether or not the rate of expansion seems justified by the

1903-1914 Quarterly.

1 *Original Sales (000) Omitted*	2 *Secular Trend*	3 *Residuals from Secular Trend (Absolute)*	4 *Residuals as Relative of Secular Trend, Per Cent*	5 *Seasonal Variation as a Relative of Secular Trend, Per Cent*	6 *Cyclical Fluctuation as a Relative of Secular Trend, Per Cent*
35721	41748	— 6027	— 14.4	+ 6.2	— 20.6
27258	41318	— 14060	— 34.0	— 21.6	— 12.4
27191	40887	— 13696	— 33.5	— 15.1	— 18.4
51399	40457	+ 10942	+ 27.0	+ 29.5	— 2.5
42401	40026	+ 2375	+ 5.9	+ 6.2	— .3
26800	39595	— 12795	— 32.3	— 21.6	— 10.7
31777	39165	— 7388	— 18.8	— 15.1	— 3.7
54941	38734	+ 16207	+ 41.8	+ 29.5	+ 12.3
43749	38304	+ 5445	+ 14.2	+ 6.2	+ 8.0
3 .367	37873	— 7506	— 19.8	— 21.6	+ 1.8
29905	37442	— 7537	— 20.1	— 15.1	— 5.0
54473	37012	+ 17461	+ 47.2	+ 29.5	+ 17.7
47256	36581	+ 10675	+ 29.2	+ 6.2	+ 23.0
30034	36151	— 6117	— 16.9	— 21.6	+ 4.7
32475	35720	— 3245	— 9.1	— 15.1	+ 6.0
53735	35289	+ 18446	+ 52.3	+ 29.5	+ 22.8
41916	34859	+ 7057	+ 20.2	+ 6.2	+ 14.0
32870	34428	— 1558	— 4.5	— 21.6	+ 17.1
30443	33998	— 3555	— 10.5	— 15.1	+ 4.6
37544	33567	+ 3977	+ 11.8	+ 29.5	— 17.7
29625	33137	— 3512	— 10.6	+ 6.2	— 16.8
23335	32706	— 9371	— 28.7	— 21.6	— 7.1
24705	32275	— 7570	— 23.4	— 15.1	— 8.3
38910	31845	+ 7075	+ 22.2	+ 29.5	— 7.3
29077	31414	— 2337	— 7.4	+ 6.2	— 13.6
24584	30984	— 6400	— 20.7	— 21.6	+ .9
29552	30553	— 1001	— 3.3	— 15.1	+ 11.8
41907	30122	+ 11785	+ 39.1	+ 29.5	+ 9.6
34027	29692	+ 4335	+ 14.6	+ 6.2	+ 8.4
25743	29261	— 3518	— 12.0	— 21.6	+ 9.6
29541	28831	+ 710	+ 2.5	— 15.1	+ 17.6
47066	28400	+ 18666	+ 65.7	+ 29.5	+ 36.2
40507	27969	+ 12538	+ 44.8	+ 6.2	+ 38.6
23397	27539	— 4142	— 15.0	— 21.6	+ 6.6
27150	27108	+ 42	+ .2	— 15.1	+ 15.3
35950	26678	+ 9272	+ 34.8	+ 29.5	+ 5.3
23982	26247	— 2265	— 8.6	+ 6.2	— 14.8
19849	25816	— 5967	— 23.1	— 21.6	— 1.5
20168	25386	— 5218	— 20.6	— 15.1	— 5.5
26493	24955	+ 1538	+ 6.2	+ 29.5	— 23.3

normal growth in sales. If expansion is not justified, the sources from which new capital is obtained should be even

1903-1914 Quarterly (*Continued*).

1 Original Sales (000) Omitted	2 Secular Trend	3 Residuals from Secular Trend (Absolute)	4 Residuals as Relative of Secular Trend, Per Cent	5 Seasonal Variation as a Relative of Secular Trend, Per Cent	6 Cyclical Fluctuation as a Relative of Secular Trend, Per Cent
22307	24525	— 2218	— 9.0	+ 6.2	— 15.2
19006	24094	— 5088	— 21.1	— 21.6	+ .5
18377	23664	— 5287	— 22.3	— 15.1	— 7.2
27460	23233	+ 4227	+ 18.2	+ 29.5	— 11.3
21838	22802	— 964	— 4.2	+ 6.2	— 10.4
15485	22372	— 6887	—30.8	— 21.6	— 9.2
17142	21941	— 4799	— 21.9	— 15.1	— 6.8
18797	21511	— 2714	— 12.6	+ 29.5	— 42.1

$y = -430.6x + 41748.$

The secular trend from 1914-1921 was upward, but the same formulas are applicable:

1914-1921 Quarterly.

1 Original Sales (000) Omitted	2 Secular Trend	3 Residuals from Secular Trend (Absolute)	4 Residuals as Relative of Secular Trend, Per Cent	5 Seasonal Variation as a Relative of Secular Trend, Per Cent	6 Cyclical Fluctuation as a Relative of Secular Trend, Per Cent
7047	6080	+ 967	+ 15.9	— 2.2	+ 18.1
5905	6535	— 630	— 9.6	— 13.3	+ 3.7
5060	6991	— 1931	— 27.6	— 7.1	— 20.5
7211	7447	— 236	— 3.2	+ 12.9	— 16.1
5493	7902	— 2409	— 30.5	— 2.2	— 28.3
6994	8358	— 1364	— 16.3	— 13.3	— 3.0
7839	8814	— 975	— 11.1	— 7.1	— 4.0
9317	9269	+ 48	+ .5	+ 12.9	— 12.4
7666	9725	— 2059	— 21.2	— 2.2	— 19.0
8069	10181	— 2112	— 20.7	— 13.3	— 7.4
9607	10636	— 1029	— 9.7	— 7.1	— 2.6
15044	11092	+ 3952	+ 35.6	+ 12.9	+ 22.7
13586	11547	+ 2039	+ 17.7	— 2.2	+ 19.9
11662	12003	— 341	— 2.9	— 13.3	+ 10.4
14306	12459	+ 1847	+ 14.8	— 7.1	+ 21.9
16814	12914	+ 3900	+ 30.2	+ 12.9	+ 17.3
13881	13370	+ 511	+ 3.8	— 2.2	+ 6.0

more closely scrutinized. Several dangers arise from overexpansion according to the sources of capital used: the first class has to do with impairment of the working capital position of the organization which existed prior to expansion; the second, with the excessive charges against income; and, the third, with the impaired credit reputation incurred by jeopardizing the earnings left over for distribution on dividend securities outstanding. If overexpansion exists, the use of the capital, having its source in present and past reinvested earnings, brings about difficulties of the first type above, since it must necessarily draw on the working capital available for current operations. The use of capital based on short-term indebtedness is fraught with serious danger as indicated in the second group above, since it increases short-time obligation, while the funds so obtained are applied for fixed capital purposes. The interval consumed in construction is often long, while the future returns on new expansion depend largely on the vicissitudes of general business conditions. The use of capital obtained by issuing additional stocks, either common or preferred, is not altogether satisfactory, as suggested in the third group of pitfalls, for additional dividend securities require assured earnings in the future, in order to avoid depreciation of these securities in the market, and so impairment of the

1914-1921 Quarterly (*Continued*).

1 *Original Sales (000) Omitted*	*2* *Secular Trend*	*3* *Residuals from Secular Trend (Absolute)*	*4* *Residuals as Relative of Secular Trend, Per Cent*	*5* *Seasonal Variation as a Relative of Secular Trend, Per Cent*	*6* *Cyclical Fluctuation as a Relative of Secular Trend, Per Cent*
12421	13826	— 1405	— 10.2	— 13.3	+ 3.1
15131	14281	+ 850	+ 5.9	— 7.1	+ 13.0
23116	14737	+ 8379	+ 56.8	+ 12.9	+ 43.9
19215	15193	+ 4022	+ 26.5	— 2.2	+ 28.7
16406	15648	+ 758	+ 4.8	— 13.3	+ 18.1
17545	16104	+ 1441	+ 9.0	— 7.1	+ 16.1
19277	16559	+ 2718	+ 16.4	+ 12.9	+ 3.5
12360	17015	— 4655	— 27.4	— 2.2	— 25.2
10770	17471	— 6701	— 38.4	— 13.3	— 25.1
12355	17926	— 5571	— 31.1	— 7.1	— 24.0
9949	18382	— 8433	— 45.9	+ 12.9	— 58.8

$y = 455.6x + 6080$,

firm's credit worth. The fourth class of danger arises from the use of capital obtained by issuing bonds or mortgages over long periods, which presents the added burden of heavy interest charges that must be carried regardless of income. The foregoing attempts to picture in a general way the consequences of overexpansion in relation to the various sources of capital. We must add that, even where expansion is justified, the sources from which capital has been procured cannot be ignored from the standpoint of their influence on the credit risk.

Symptoms of overexpansion.—This leads us naturally to consider the meaning of the third set of conditions that might develop in connection with expansion which absorbs owned or borrowed funds—that is, the effects of expansion policies on the present and probable future financial resources of the concern. Regardless of whether the expansion has been in line with the normal development of the firm's volume of business, the methods of financing expansion operations affect the present and future financial status in different ways and different degrees. The credit man must learn to detect in the financial progress of a concern the symptoms that indicate that it is laboring in the throes of excessive expansion. The source of funds, or methods of financing these operations, as well as the fixed charges incurred, often predicate certain financial results. The following symptoms might be present in some or all cases, and might be revealed by an adequate diagnosis of financial statements:

1. A reduction in the net working capital position relative to the enlarged amount of fixed assets.
2. A reduction in the net working capital position attendant upon a withdrawal of working capital for purposes of financing the new expansion, or upon an increase in short-term liabilities resulting from the use of current borrowings for expansion or as a result of purchasing fixed assets on credit.
3. A marked increase in long-time indebtedness that demands certain portions of current income for fixed interest charges. Such interest charges combine with certain overhead charges, such as taxes, depreciation, insurance, etc., and often make serious inroads on both current and future income.

4. A heavy increase in permanent charges against income before the newly added capacity can be brought into active use.

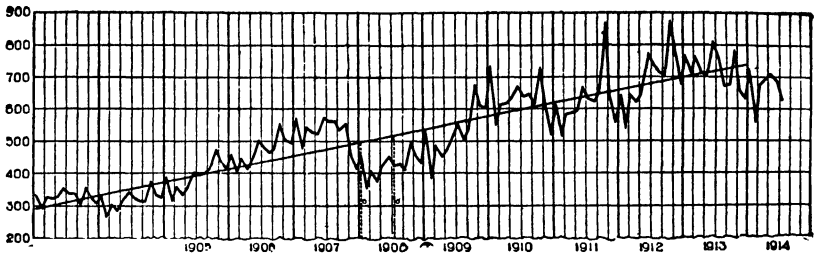
5. Further reduction in working capital, as well as reduced income, and often further borrowing, as a result of persistent overexpansion. The latter may be forced and, if so, it cannot be continued indefinitely without reorganization of the concern, to scale down the capitalization.

Credit ratios as measures of fixed expansion and its effects.—The first matter to be established in analyzing the credit factors of expansion is the correctness of the rate expansion. But the rate of expansion in fixed assets may be fast or slow in itself, without lending any clue as to its advisability. Therefore, a relationship must be established, that is, given a certain rate of expansion, is it in harmony with the growth in the volume of business transacted by a firm? The volume of business is represented by the trend of sales. The credit ratio proposed here, as practically serviceable in measuring the trend of expansion, takes into account the especially long-time significance of fixed expansion and the fact that its effects cannot be immediately determined without permitting time to intervene. But, on the other hand, the credit man must judge its effects on the current financial position of the firm, since he is primarily interested in the repayment of short-term obligations. In order to reconcile the long-time and short-time viewpoint, the following credit ratio is recommended as valuable in judging the desirability of expansion:

$$\frac{\text{Normal Net Sales}}{\text{Fixed Assets}} \times 100 = \text{Ratio or Percentage.}$$

The normal net sales figure is derived by a method which need not entail elaborate calculations on the part of a credit man. The method may be simply to graph the raw figures of net sales on a chart for a period of years and mechanically adjust a line to these sales figures so that equal areas representing areas of prosperity and of depression appear roughly below and above this line. Of course, greater accuracy would be attained if scientific methods were used, such as described above by Dr. Hall, or that used by the Harvard Economic Service. Calculations of a company's normal growth in sales

by the latter can be studied in the latter's recent issue of the "Comparison of an Individual Concern with the Harvard Index of General Business Conditions." Complete explanation of the method used is there given, together with good illustrations. The chart of company *M's* sales is here reproduced with the courtesy of the Harvard Economic Service:



Sales of Company M (Actual Data in Hundreds of Dollars) in the Pre-War Interval.

Illustration of method of calculating ratio of normal net sales; fixed assets.—For the purpose of illustrating the method of calculating the ratio discussed, the following figures might be assumed:

	Fixed Assets	*Normal Net Sales*		*Fixed Assets*	*Normal Net Sales*
1907.....	$27,000	$160,000	1915.....	$45,000	$240,000
1908.....	27,000	170,000	1916.....	48,000	250,000
1909.....	30,000	180,000	1917.....	60,000	260,000
1910.....	32,000	190,000	1918.....	60,000	270,000
1911.....	32,000	200,000	1919.....	60,000	280,000
1912.....	36,000	210,000	1920.....	70,000	290,000
1913.....	36,000	220,000	1921.....	85,000	300,000
1914.....	36,000	230,000	1922.....	85,000	310,000
			1923.....	100,000	320,000

An example of the construction of this credit ratio on the basis of these figures might be as follows: Let us assume that a credit man has before him the above data, and that he is interested in determining the advisability of expansion for 1923. Since he is to disregard the actual sales figures, he is to rest his judgment on the figures representing normal growth of sales. Thus, in 1919, the normal sales are $280,000, even though a short-time drop below the figure occurred in the actual sales. The figure of $280,000 is obtained by taking the figure represented on the ordinate in 1919 as determined by

the straight line adjusted to the raw sales figures. Accordingly the normal sales figures for the following years might be as follows:

1919	$280,000
1920	290,000
1921	300,000
1922	310,000
1923	320,000

The normal net sales to fixed assets ratios for these years would then be as follows:

	Per Cent
1919	467
1920	414
1921	353
1922	364
1923	320

It can readily be seen on the basis of the trend of these ratios that the firm has expanded more rapidly than the approximate normal growth in its volume of business. At the same time it is evident, from a survey of normal net sales, that the rate of growth of sales has slackened, though the figures on fixed expansion indicate no such retardation. This only corroborates what has been proved by the trend of the ratios above.

Reasons for proposing ratio.—The reason for proposing the Normal Net Sales: Fixed Assets ratio, as a tolerably practical measure of expansion, lies in the ease with which it is computed, and in the fact that it eliminates the influence of short-period price swings on sales. Therefore, the two elements in this proportion are brought together on a comparable basis—price: that is, normal sales figures represent the volume of business in terms of normal or long-time price swings, while the inventory valuation of the fixed assets can generally be assumed to bear a closer relation to the secular trend of prices than to the cyclical changes in prices.

Use of ratios to determine source of capital in expansion.—The sources of capital for purposes of new expansion can be gleaned from a set of ratios already discussed under the first chief credit factor in Chapter ix, and in the succeeding two chapters. The ratios of special importance in this connection are those which give evidence as to whether the capital for

expansion has been procured from stockholders, reinvested earnings, long-time, or short-time, borrowing. Therefore, the ratios of Net Worth: Total Debt, Surplus: Net Worth, and Current Debt: Funded Debt, must be analyzed, in order to determine the capital sources for expansion. In conjunction with the rate of expansion as given in the above figures, which show the normal trend of the volume of sales and the growth of fixed assets, the following data as to source of capital might be illustrative of the relationship to expansion:

	1919	*1920*	*1921*	*1922*	*1923*
Net Worth	$55,000	$60,000	$60,000	$75,000	$75,000
Surplus	15,000	20,000	20,000	35,000	35,000
Current Debt	20,000	30,000	35,000	30,000	45,000
Funded Debt	15,000	15,000	20,000	20,000	20,000

Ratios	*Per Cent 1919*	*Per Cent 1920*	*Per Cent 1921*	*Per Cent 1922*	*Per Cent 1923*
Net Worth: Total Debt	157	133	109	150	115
Surplus: Net Worth	27	30	30	22	22
Current Debt: Funded Debt	133	200	175	150	225

Results of analysis of ratios.—The analysis of these ratios offer these conclusions: The concern maintains $1 of debt to every $1.15 of owned capital in 1923, which, with the exception of 1921, an exceptionally lean year, is lower than formerly. It seems, therefore, that the firm is expanding on borrowed funds. The Surplus: Net Worth ratio does not indicate a greater proportion of reinvested earnings; but, on the contrary, this proportion is actually declining. Evidence as to whether the borrowing for fixed expansion is done on long-time or short-time can be gleaned from the third ratio in the above table. It is quite clear from the trend of this ratio that the funds are procured by an increase in short-time obligations. Since we have previously seen that the firm is expanding its fixed investments at a more rapid rate than the normal growth in its volume of business, and that the increase of current debt shows that the firm is carrying on its expansion by means of short-time borrowing, we conclude that the credit position of the concern in 1923 is considerably weaker than before. Reverses in business conditions might easily jeopardize a credit risk so assumed.

Ratios measuring correctness of expansion.—Finally, it is necessary to look for symptoms in the financial complexion of the concern which might be subject to a diagnosis, and that indicate whether the concern is already manifesting the costs of overexpansion. Naturally, the first symptoms would appear in the charges against income and in the trend of the net working capital position, according to the conditions as outlined on pages 311 and 312 above. Of course, the continuance of these financial burdens, enforcedly assumed as a result of overexpansion, hinges to a large extent upon the trend of business conditions, particularly on the nature of the ensuing phase of the business cycle. Therefore, the severity of overexpansion cannot be tested at all times with an equal degree of assurance, especially in view of the inherent nature of most expansion, which necessarily takes into account the long-run factor of normal growth of the business. For expansion is not often planned to fulfill only temporary needs for added capacity. So it becomes doubly necessary for the credit man to make an interpretation of the statements, with the aim of discovering symptoms that predicate future trouble as a result of overexpansion, and subsequently to reëvaluate these findings on the basis of the probable trend of business conditions. To illustrate this principle further, let us assume certain additional financial facts in the concern and, in so doing, recall certain ratios developed in the previous chapters, particularly the Net Earnings: Net Worth, as well as the ratios that indicate the position of net working capital. The ratios most effective in this connection, covering a period similar to that covered by the figures given above, would be as follows:

Ratios	*Per Cent 1919*	*Per Cent 1920*	*Per Cent 1921*	*Per Cent 1922*	*Per Cent 1923*
Net Earnings: Net Worth.....	25	27	10	18	15
Current Assets: Current Liabilities..	260	280	195	225	200
Net Working Capital: Fixed Assets..	135	145	115	120	122

NOTE.—The ratio of Net Working Capital to Fixed Assets is often inadequate, if considered in connection with expansion, since figures on fixed assets often include unfinished plant, etc., for which working capital need not yet be provided. This ratio would naturally show a low percentage under such circumstances.

Analysis of above ratios.—The added credit information regarding symptoms of overexpansion gained from the above

group of ratios and their related trends, over the period 1919 to 1923, may be stated in these terms: the per cent of earnings on their capital left to the owners is not quite so favorable as in the previous years, with the exception of the hard year of 1921. This offers the suggestion that the firm is not making a profit on its sales, that it is forced to meet increasing charges against its sales profit, or that it is tying up too much working capital in unliquid investments and is not maintaining sufficient working funds for its current operations. The fact already revealed, namely, that the firm is expanding on the basis of an increase in current debt, is substantiated by the decline of the current ratio in 1923 and its remaining comparatively low as compared to preceding years. The slow recovery of the net working capital position, in 1923, after its sharp decline in 1921 from its 1920 status, followed by a fair increase in 1922, indicates that the concern is not in a favorable position, as regards potential working capital, to meet demands which will result from the overexpanded condition which it had assumed in 1923. This analysis, we hope, clearly indicates that the credit worth of this firm as a result of (1) too active expansion in fixed investments in relation to its normal growth in volume of business, and (2) financing this expansion by short-time borrowing, is showing, on the basis of the influences of overexpansion on the probable future financial resources of the concern, symptoms that spell caution for the credit man who is contemplating a credit risk.

Practical Ratio Analysis of Credit Cases.

Steps in procedure.—From the standpoint of short-time credit risks, determining the rate of fixed expansion manifested by a concern involves these steps: (1) the actual rate of increase in fixed assets in relation to the normal or long-time growth in the volume of sales must be determined; (2) an evaluation of the correctness of this relation must be made. The criteria that must be adopted for this purpose are three: (*a*) an excessive expansion; (*b*) an underexpansion; and (*c*) a normal justifiable growth. Conclusions with reference to these criteria must be derived from an examination and analysis of such factors in the concern's financial performance as are germane to the financial effects of expansion, and sympto-

matic of it. The specific ratios adopted for the following analysis are:

1. Normal Net Sales: Fixed Assets.
2. Net Worth: Total Debt.
3. Surplus: Net Worth.
4. Current Debt: Total Debt.
5. Net Earnings: Net Worth.
6. Current Assets: Current Liabilities.
7. Net Worth: Fixed Investments. (This ratio has been selected instead of Net Working Capital: Fixed Assets.)

As a matter of fact, fixed expansion usually affects the entire financial structure of a firm, so that, although the above ratios have been specially selected as measures af the results of expansion, other ratios, previously developed, might also be referred to in this connection.

RATE OF EXPANSION OF THE DEPARTMENT STORE

	Ratios in Percentages									
Credit Ratios	*1914*	*1915*	*1916*	*1917*	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
Normal Net Sales : Fixed Assets	1307	1597	2136	2845	846	857	929	992	1030	1121
Current Ratio	288	284	298	1002	209	186	211	202	201	204
Net Earnings: Net Worth ..	0	9.8	6.2	11.5	6.3	10.5	19.1	1.9	2.5	4.8
Surplus : Net Worth	12	17	19	20	17	19	32	31	30	38
Net Worth: Fixed Investment	305	315	348	540	239	232	268	249	239	254
Net Worth: Total Debt ..	279	267	278	1107	186	152	177	168	174	171
Current Debt: Total Debt ..	100	100	100	100	100	100	100	100	100	100

Store's yearly sales growth.—It was seen that this department store showed a good credit position at the end of 1923. The fixed assets were quadrupled in 1918, and in 1919 another significant increment was added. Thereafter, a small increase occurred each year until an approximately even level was reached and maintained in 1922 and 1923. The line of

normal growth for the sales was determined from the figures between 1914 and 1923 inclusive. It was discovered that a yearly increment of $1,000,000, in the expansion of the volume of sales, reflected quite accurately the long-time trend. The normal net sales were calculated for each year by adding $1,000,000 each year consecutively from the original normal sales figure in 1914 up to 1923.

Of course, considerable objection might be raised to the use of a straight line to represent the line of normal growth. The method would seem too inflexible, in many cases. There are no reasons, as a matter of fact, why a credit man should not use any method which he thinks may best fit the particular case before him. It is the purpose here to deduce only a set of working principles, and not to set forth any absolute formulas for use in credit analysis.

Analysis of ratio of normal net sales to fixed assets.—The trend of the ratio of Normal Net Sales: Fixed Assets very clearly indicates what has been said above concerning the increase in the fixed assets of this store. The wholesome feature about the course of this ratio from 1918 to the end of 1923 was that the normal growth in the company's volume of business gradually absorbed the increased capacity provided. Even though the high point reached by the ratio in 1923 was not comparable to the high level maintained until 1918, the rate of increase in the last few years indicated that the store is making an increasing use of its fixed assets. Furthermore, the ratios from other combined figures dealing with the proportion of Net Sales: Fixed Assets of 34 department stores in 1922, and of 55 in 1923, showed a percentage of 387 and 561 in each of these years respectively.[2] In comparison, the ratios of this concern were indeed high, since the proportion of Net Sales: Fixed Assets stood at 1111 per cent and 1121 per cent in the same years respectively.

Reflection of expansion by other ratios.—The earlier analysis of the working capital position of this store pointed to a current ratio hovering around a little over 200 per cent during the past six years—with the exception of 1919, when it fell considerably below. This lack of improvement in the current ratio indicated that the firm experienced poor profits,

[2] *Cf. supra,* p. 185, footnote.

used its profits for other than working capital purposes, or withdrew them in the form of dividends. Poor profits might be due to heavy fixed charges, as well as to small profit margins on sales. The forms in which withdrawals of working capital might occur have been previously described.[3] It now remains to be seen whether the company shows symptoms of over-expansion in fixed assets. The situation with reference to its working capital seemed quite favorable according to the conclusions reached in Chapter xi. However, the store is operating on a narrow though improving margin of profits, as is shown by the ratio of Net Earnings: Net Worth. Its surplus was nevertheless increased, and, in addition, the net worth covered the fixed investments to a greater extent, in 1923. The earnings in that year did not justify the addition to surplus, so it would seem that the firm has juggled some asset figures to increase the Surplus account. The increased debt, all in the form of short-time obligations, was evidently incurred for the purpose of retiring preferred stock and for increasing the personal loans. In the absence of an income statement it is difficult to determine the position of the fixed charges. The analysis of the above ratios, however, points to no unfavorable symptoms of excessive fixed assets expansion. The growth of the store's sales justifies the belief that, although the margin of profits on sales was small, the fixed assets have demonstrated their productiveness.

RATE OF EXPANSION OF THE WHOLESALE HARDWARE AND GROCERY CONCERNS

WHOLESALE GROCERY CONCERN

Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
	-Ratios in Percentages-					
Normal Net Sales : Fixed Assets	1957	2098	1843	1669	1497	1356
Current Ratio	211	210	227	251	249	251
Net Earnings: Net Worth	19.9	21.4	21.5	2.7	1.5	14.4
Surplus: Net Worth	8	7	13	3	7	6
Net Worth : Fixed Investments	440	452	402	358	347	359
Net Worth: Total Debt	147	134	136	196	204	210
Current Debt: Total Debt	99	98	91	97	99	100

[3] *Cf. supra,* Chapter xi.

Significance of expansion for various firms.—The proportion of the total capital absorbed by the fixed assets was greater for the wholesale hardware concern than for the department store, while that of the wholesale grocery was less than either of them. Naturally, a mercantile concern requires less in the way of fixed assets than does a manufacturing concern. Again, wholesale establishments, as a rule, possess a smaller amount of fixed assets than do retail concerns. This is often true whether the relation of fixed equipment to the amount of business done, or to the total capital invested, is considered. It must also be patent that the more a merchandising company's capital is tied up in long-time investments—such as buildings, storehouses, delivery equipment, etc.—the greater must be the profits yielded by the sales on the remaining capital used for current operations. A department store, as contrasted with a wholesale concern, might require more ostentatious buildings for purposes of display and advertising, although the wholesale firm, if it does not possess adequate storing facilities, must often meet heavy storage and insurance charges. However, in some lines of business, where the wholesalers perform merely the function of place utility, the movement of goods is direct from the manufacturer to the retailer, with no handling burden on the part of the wholesaler. A hardware concern dealing in less current products, unperishables, and capable of indefinite storage, might, therefore, need more building facilities than would a grocery concern whose goods seldom admit of indefinite holding, owing to deterioration and the quick turnover compelled by competition. These considerations are presented in order to point out the various factors that determine the size of the physical equipment required by mercantile houses. Besides, the credit man must remember that storage space might be rented.

Rate of expansion of wholesale hardware concern.—The short-lived business career of the wholesale hardware company, and the serious reverses it suffered subsequent to 1919, prevented a study of the rate of the fixed expansion. The diminished volume of sales during the last five years, combined with the relatively high proportion of fixed assets, seems to prove that the firm was not making the investment pay. The fixed assets absorb one-third of the total capital, a rather high figure for a mercantile concern. The following comparison

further evidences the excessive amount of fixed assets possessed by this firm:

	-Ratios in Percentages-					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Net Sales: Fixed Assets:						
This Firm	1019	1171	804	490	460	371
35 Firms (Robert Morris Associates)	...	...	...	...	664	...
38 Firms (Robert Morris Associates)	...	...	...	...	...	996

Analysis of ratios for wholesale grocery concern.—The data on the fixed expansion of the wholesale grocery concern was obtained by the procedure recommended in this analysis. The normal growth of sales indicated an additional yearly increment of $100,000. The fixed assets have been gradually increased during the six years, while they were simultaneously absorbing more and more of the total capital. The ratio of Normal Net Sales: Fixed Assets tended downwards. The Net Sales: Fixed Assets ratio naturally fluctuated with the trend of general business conditions, but, in 1923, the figure remained well below those for 1918, 1919, and 1920. The following comparison is significant:

	-Ratios in Percentages-					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Net Sales: Fixed Assets:						
This Firm	1578	1881	2184	1435	1250	1443
56 Firms (Robert Morris Associates)	...	...	...	...	1043	...
108 Firms (Robert Morris Associates)	...	...	...	...	...	1255

Although the trend of Normal Net Sales: Fixed Assets ratio is downward, it seems that, in 1923, this company gave no evidence of excessive expansion. The improvement in all the related ratios, including those that measure profits earned on the owned capital, net worth in excess of fixed investments, net worth as against total indebtedness, and the proportion of funded obligations, indicate no ill effects of expansion.

The exceedingly small proportion of fixed assets in relation to total capital and net sales brings the shoe manufacturing concern (p. 323), into the category of mercantile houses.

Indeed, these ratios indicate a much smaller amount of fixed assets than that of the concerns previously studied. As we have stated before, there is this difference, however, that the shoe firm must meet rental charges, which is not necessary for the wholesalers and retailers, except in so far as the wholesalers might at times have to pay storage charges.

RATE OF EXPANSION OF THE SHOE MANUFACTURING CONCERN

Credit Ratios	*1918*	*1919*	*1920*	*1921*	*1922*	*1923*
	-Ratios in Percentages-					
Normal Net Sales : Fixed Assets	1824	1856	1990	2144	2211	1994
Current Ratio	179	203	192	182	274	245
Net Earnings: Net Worth	14.4	18.9	10.1	Loss	1.9	16.1
Surplus: Net Worth	30	31	18	7	8	13
Net Worth : Fixed Investment	375	624	534	498	504	581
Net Worth: Total Debt	92	110	104	210	191	175
Current Debt: Total Debt	99	100	100	100	100	100
Net Sales: Fixed Assets	...	...	...	...	1354	1646
31 Firms (Robert Morris Associates)	...	...	...	...	399	...
48 Firms (Robert Morris Associates)	...	...	...	...	...	610

Analysis of the ratios of expansion and of the effects of expansion indicates a wholesome state of affairs. The firm's annual increment of growth in sales was figured at $100,000. The amount of fixed assets showed no marked change to 1923, and the mild increase in this last year presented no problem. Comparison of this company's Net Sales: Fixed Assets ratio with the combined ratios of 31 and 48 firms in 1922 and 1923 yields exceedingly satisfactory results, although it must be remembered that the average ratios of the shoe firms might be lower, because of the different policies adopted with respect to their machinery. In case of merchandising enterprises and manufacturing concerns, which lease their equipment, the problem of fixed assets may not be of great importance in credit analysis. Nevertheless, this item must be watched in view of the fact that mercantile houses, especially, are primarily engaged in current business operations, in getting goods from the manufacturer to the retailer, and should, therefore, leave by far the major portion of their capital in the form of working funds.

RATE OF EXPANSION OF THE SILK MANUFACTURING CONCERN

Credit Ratios	Ratios in Percentages								
	1918	1919	1920	—1921—		—1922—		—1923—	
				7/2	12/31	7/1	12/31	6/30	12/31
Normal Net Sales: Fixed Assets	165	224	277	259	310	168	183	145	156
Current Ratio	253	246	362	291	315	257	228	391	347
Net Earnings : Net Worth	14.4	22.5	.8	11.6	11.5	5.1	11.4	7.2	2.4
Surplus: Net Worth	15	28	22	29	11	7	23	28	28
Net Worth : Fixed Assets	162	211	200	239	224	167	180	139	141
Net Worth : Total Debt	398	278	525	357	325	316	259	222	210
Current Debt: Total Debt	100	100	100	88	89	92	94	41	46
Net Sales : Fixed Assets	197	250	313	179	374	146	185	135	81

Concern has large field assets.—The silk manufacturing concern presents a case in which the fixed assets bulk large, consuming about one-half the total capital investment. Such a fixed investment represents money capital sunk, and its return is predicated upon the laws of reproductivity of the fixed assets. This means not only that profits are the medium through which reproduction must take place, but also that the carrying charges as overhead costs must not be too large in proportion to the sales profits.

Rate of expansion analyzed.—It is found that the normal growth in the sales of this company followed a line of $2,000,000 added increase annually. A straight line adjusted to the actual sales figures seem to reflect the growth quite accurately. The Normal Net Sales: Fixed Assets ratio marked a fluctuating downward trend since 1921. While this company showed an increasing productivity of fixed assets, in terms of volume of sales as well as in increasing utilization of its plant capacity up to the end of 1921, the rate of fixed expansion subsequently undertaken pointed to an excessive creation of production facilities. The course of the Net Sales: Fixed Assets ratio definitely supports the conclusion that this firm's optimism has seriously jeopardized the productivity of the fixed investments.

Firm's expansion netted unfavorable results.—Over-expansion should be reflected first in the current ratio and this

for two possible reasons: (*a*) that heavy fixed charges reduce the amount of working capital available for current operations or losses might be incurred; (*b*) that working capital might have been used for the purchase or construction of fixed assets. That the heavy expansion in 1922 had made serious inroads on the supply of working capital by increasing the overhead costs, as well as by using working funds for fixed investment purposes, became evident from the trend of the current ratio. The sudden rise in this ratio in 1923 was due to increasing funds by means of issuing funded obligations.

The earnings on net worth, especially in the last eighteen months of the period, point to a drain on sales profits by excessive fixed charges. These charges were augmented by the increased interest on the greater long-time indebtedness. Although the allocations of earnings for reinvestment increased in 1922 and 1923, the capital stock made no advance. But the additions to net worth from earnings, which were declining both absolutely and in percentage on net worth, seemed insufficient to provide for the fixed expansion. The Net Worth: Fixed Assets ratio bare witness to this fact. Conse-

RATES OF EXPANSION OF SPECIALTY METALS MANUFACTURING CONCERNS

Company 1

	Ratios in Percentages					
	1918	*1919*	*1920*	*1921*	*1922*	*1923*
Credit Ratios:						
Normal Net Sales: Fixed Assets	318	338	302	308	321	334
Current Ratio	204	199	205	206	205	200
Net Earnings: Net Worth.	35	36	33	11	16	23
Surplus: Net Worth	36	45	43	41	39	41
Net Worth: Fixed Assets..	122	144	142	154	150	154
Net Worth: Total Debt...	127	140	175	202	249	284
Current Debt: Total Debt.	61	71	74	83	89	100

Company 2

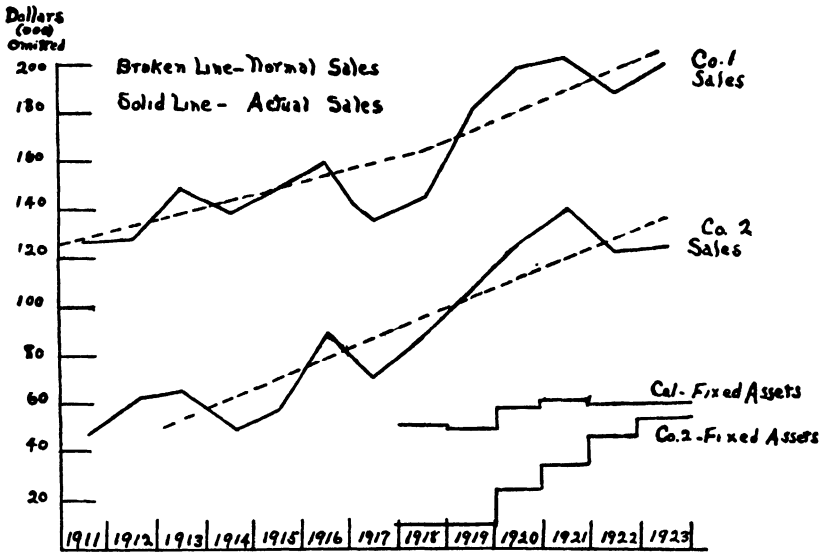
Credit Ratios:						
Normal Net Sales: Fixed Assets	490	531	477	342	270	250
Current Ratio	206	202	199	199	195	167
Net Earnings: Net Worth.	48	44	48	9.6	4.7	—3.6
Surplus: Net Worth	11	24	29	32	29	22
Net Worth: Fixed Assets..	135	156	141	115	104	83
Net Worth: Total Debt...	105	88	80	77	84	65
Current Debt: Total Debt.	62	65	62	55	53	52

quently, the concern was forced to appeal to the investment market for funds, which resulted, as we have seen, in a heavy increase in long-term debt as compared with current obligations. The company, at the end of 1923, found itself under the burden of heavy recurring fixed expenses, large oversupply of fixed assets, and a decline in earnings and sales. It is obvious that if the firm could do $15,674,474 worth of business in 1921 with about $4,200,000 worth of plant facilities, it surely did not require about $11,000,000 of such facilities with which to do $17,000,000 worth of business—on the basis of the normal net sales—in 1923. Even though it might be conjectured that the depression in actual sales during 1923 was only temporary, the increased fixed assets, especially in that year, were unjustified. The firm will experience difficulties in carrying these assets until the growth in sales has absorbed this capacity.

Comparative analysis of rates of expansion.—The normal growth in the volume of business of the two concerns is the same—$8,000 annually—in the past five years. In both cases the long-time trend in sales seemed to turn upwards about 1915-1916, but this break occurred a little earlier for Co. 2. The proportions of Normal Net Sales: Fixed Assets, however, drive in opposite directions after 1919. The reasons are clearly manifest from the broken lines representing fixed assets of the two companies in the chart on p. 327. Co. 2 had been greatly increasing its fixed assets while Co. 1 got along with only a moderate addition in 1920. This indicates beyond doubt that Co. 1 was able, by efficient production management, greatly to expand its sales on the basis of equal plant facilities. Co. 2, on the other hand, fostered a vigorous expansion with no greater increase in sales. The trend of the above demonstrates that Co. 2 is rapidly tending toward an overexpanded condition.

Bad effects of expansion of Co. 2.—Since Co. 1 showed only a conservative expansion rate and a highly efficient production organization, it will not be necessary to consider the unwholesome effect of fixed overexpansion. Therefore, the following analysis will deal primarily with the financial results of the excessive increase in the fixed assets of Co. 2. The difficulty experienced by this company in maintaining an ade-

quate supply of working capital has been proved in the foregoing analysis of the ratios of this company. The current ratio drops seriously in 1923, after some loss in the preceding year. The heavy constantly recurring costs seemed not only to have eaten into the profits on sales, but also to have impaired the supply of working capital. The increasing funded obligations have been insufficient to cover the funds necessary for the rapid expansion; therefore, some working capital and some funds borrowed on a current basis have been employed



Sales and Fixed Assets of Companies 1 and 2.

additionally for the purpose. The net earnings on net worth further evidence the firm's inability to make a profit in the face of the heavily increasing overhead. Up to 1923, the reinvested earnings showed that the management attempted to use all forms of available capital for its expansion plans. Nevertheless, the increase in owners' investments did not counteract the decreasing margin of net worth over fixed assets nor that over total debt. Constant appeals to long-term obligations aid in postponing the inevitable financial collapse. But in this indefinite delay repayment of borrowed funds does not counteract the ill effects of overexpansion. Unless the expansion justifies itself before the excessive over-

head costs and interest charges begin, and continue to eat up the profits on sales, the company must sooner or later seek refuge in scaling down the present capitalization sufficiently to insure the ultimate absorption of the increased plant capacity by the normal growth in the volume of sales.

Recapitulation.—

A. Department Store—Normal growth in sales justifying fixed expansion.
B. Wholesale Hardware—Serious decline in sales led to excessive fixed assets.
C. Wholesale Grocery—Expansion was justified.
D. Shoe Manufacturing—Fixed Assets presented no problem, but unknown terms of leased machinery might.
E. Silk Manufacturing—Overexpansion was much in evidence.
F. Co. 1. Manufacturing—Efficient and conservative management of fixed assets.
G. Co. 2. Manufacturing—Overexpansion showed serious financial effects.

Summary of Credit Judgments Based on the Foregoing Completed Ratio Analysis.

Before presenting these conclusions, a word of caution is necessary, because of the contrast between the position of the author with reference to the companies whose statements have been analyzed and that of the credit man of a going concern. For the author is interested primarily in the method of analyzing credit statements, and only secondarily in the final credit judgment upon which the acceptance of a credit risk hinges; while the credit man, on the other hand, engaged in every-day practical credit work and interested mainly in credit decisions, has, in addition to conclusions obtainable from credit ratio analysis, at least two other elements on which to base his final credit judgment. The first is his own accumulated experience as a credit man—what might be called the "sixth sense." The second is the background formed by the policy and resources of the particular con-

cern for which the credit man is judging credit risks. In brief, the final credit decision is based on the following factors:

A. The analysis of data bearing on the credit risk.

B. The experience of the credit man.

C. The background of policy and resources of the credit man's firm.

In reaching the following conclusions the credit standing of each firm has been judged as of the end of 1923. The reasons for the decision are summarized. If it is found that the risk is neither good nor bad, but one that requires watching, the reasons for caution are stated.

A. *Department Store:*

A good credit risk for the following reasons:

1. The store is in a good working capital position both from the standpoint of supply and liquidity.
2. Though some tendencies toward weakening of financial structure are noticeable in the expansion in fixed assets to 1923, which has prevented improvement in the debt position, the store gives evidence, none the less, of its ability to overcome this drawback. It has ceased investing funds in fixed assets while the increasing sales and larger earnings augur well for its future.

B. *Wholesale Hardware Concern:*

A poor credit risk because:

1. The heavy indebtedness is swamping the concern to the point where the creditors have a greater investment than the owners.
2. It has operated at a loss in the last three years, owing to the fact that sales have steadily and greatly declined; that the turnover of stocks and receivables has seriously decreased; that the charges against income have risen; and that the debt has grown correspondingly in size and burdensomeness.

3. The current ratio in this case is entirely misleading, because the firm is seeking to maintain its net working capital position by increasing the funded debt. This is not warranted in view of the losses, immovable stocks, slow collections, and rather large fixed investments for a wholesale business.

C. *Wholesale Grocery Concern:*

A very good credit risk, since:

1. The ratios point to a well-balanced financial structure, a sufficient supply of working capital maintained in a highly liquid form, profitable operations, and a program of fixed expansion nicely adjusted to the normal growth of sales.

D. *Shoe Manufacturing Concern:*

A reasonably good credit risk for the following reasons:

1. The concern gives evidence of a slowly improving working capital position. It possesses a good supply, and the supply is kept active.
2. It has a modified fixed assets problem, for its machinery is leased. Earnings and working capital seem to be quite ample to meet such charges.
3. The debt position is less satisfactory, and any tendency to return to the liberal borrowing policy of 1918 to 1921 should be regarded with apprehension. At the end of 1923 the concern shows favorable additions to surplus, which, if considered in connection with increasing sales and with greater activity in working capital, should lead to good financial results in the future.

E. *Silk Manufacturing Concern:*

This is a questionable risk, and if assumed will require close supervision in order to apprehend unfavorable developments. The following reasons may be found for assuming it and these have only a quantitative significance:

1. A decreasing but still favorable margin of owner's investment over debt.
2. A good margin of current assets over current liabilities.

The following evidences of weakening would suggest refusal of the risk:

1. Fixed expansion has been marked.
2. Merchandise stocks are overlarge.
3. Sales have greatly declined and working capital shows a very unliquid condition.
4. Heavy fixed charges claim larger portions of income; interest charges on the heavily increased funded debt are burdensome.
5. The future credit worth of the company is predicated upon exceedingly favorable marketing conditions, a vigorous merchandising policy and the ability to move stocks at a good profit. If these conditions do not materialize financial difficulties are imminent.

F. *Company No. 1—Specialty Metal Manufacture:*

The risk is very good since:

1. The concern possesses an ample margin of current assets over current liabilities and the working capital is in a very liquid condition. There is a large owner's investment in comparison with debt, and the latter is all in current form.

G. *Company No. 2—Specialty Metal Manufacture:*

A poor credit risk because:

1. The company is operating on a too liberal debt, a declining current ratio, and a weakening working capital position. The overlarge plant investment and heavy indebtedness is jeopardizing income. The enlargement in production capacity is leading to a serious amount of overstocks. The concern appears to be caught already in financial difficulties, owing to its heavy reliance on borrowed funds and to general overexpansion. A readjustment of its capital structure seems imperative.

References.

Bliss, "Financial and Operating Ratios in Management," Chapter xxxvii.

Chapter XII

CREDIT ASPECTS OF THE MANAGEMENT OF WORKING CAPITAL

Meaning of net working capital.—The credit man, no less than the business executive, focuses his attention relatively more on the working capital position of a firm than on any other aspect indicative of its financial standing. The principal measure of this working capital position is usually the amount of net working capital in the business. The net working capital is always equal to the margin of current assets in excess of current liabilities, and, since the current liabilities are not subject to shrinkage except by being paid off, this difference is invariably regarded as an insurance fund, or margin of safety, against the possible shrinkage in value of current assets. This net working capital fund must not be regarded as representing the amount of working capital actually owned by a firm. Such an assumption might be entirely false, as may be seen in the following case:

Fixed Assets	= $100,000	Net Worth	= $90,000
Current Assets	= 75,000	Funded Debt	= 45,000
		Current Debt	= 40,000

Net working capital in this case would be $35,000, but this amount is not necessarily owned capital, for the figures show that the net worth does not cover the fixed assets. On the other hand, if we assume that the funded debt is absorbed by fixed assets, leaving $35,000 of net worth for working capital, then it might be alleged that this amount does represent owned capital. However, taking an enterprise as a going concern, the invested funds lose their identity in being paid out for the various assets, and it would be practically impossible, therefore, to draw the conclusion that the $35,000 of net working capital are owned funds.

Sources of working capital.—The gross amount of working capital in a business is equivalent to the value of the current

assets. Theoretically, this value is equivalent to the book or accounting value of the items making up the current assets. Actually it changes with the marketability and market price of inventories and of the investments that constitute the liquid assets—such as securities, etc.—and with the collectibility of receivables. The one source of working capital, namely, current borrowing, contributes, as a rule, the major portion. Naturally, what is left after subtracting the current debt from the total current assets represents the net working capital. The source of this amount may be the owners' or stockholders' contributions, or may be obtained by long-term borrowing. Referring again to the current debt, this item may appear in several forms, such as, accounts payable, notes and acceptances payable, accruals of wages, interest, insurance, taxes, etc. In the case of notes and acceptances given to banks, individuals, commercial paper houses, or brokers in return for funds, actual money has been obtained in the form of working capital. In case of accounts, notes, and acceptances payable, given for merchandise or services, no funds have been obtained; but the merchandise or services have been acquired which must be paid for in funds at a later date. In the case of accruals, also, no funds have been brought into the business; but services have been rendered it for which it must pay periodically in money. Essentially, there is little difference between these forms of current liabilities and the manner of their acquisition, except from a credit standpoint. From this standpoint one might consider that current debt items arising out of the procurement of funds are indicative of better credit capacity than items originating in postponed or deferred payments for services or goods.

Illustration of credit significance of sources of working capital.—The following statements of two concerns well illustrate this point:

Company A

Cash	$10,000	Accounts Payable	$15,000
Receivables	18,000	Accruals	10,000
Merchandise	25,000	Bills Payable to Banks	5,000

Company B

Cash	$10,000	Accounts Payable	$ 5,000
Receivables	18,000	Accruals	8,000
Merchandise	25,000	Bills Payable to Banks	17,000

It would seem justifiable to assume that Co. B occupies a better credit position than Co. A, since the former has a greater proportion of current liabilities in the form of bank loans than the latter company. The reasons for such a conclusion might be stated as follows:

1. Co. B has had its credit capacity tested by its bank, or by other financial institutions, whose primary function is to extend credit.
2. Co. B is taking advantage of cash discounts in purchases.
3. Co. B does not permit accruals to bulk large.

On the other hand, Co. A's current debt would suggest the contrary implications, namely:

1. Co. A's credit capacity has been tested by the seller of merchandise, whose motives are often to procure an increasing volume of sales, whose credit terms may be easy, and who may, therefore, lead Co. A to overbuying.
2. Co. A is not taking full advantage of cash discounts.
3. Co. A allows accruals to grow, and shows less promptness in meeting these constantly recurring expenses.

Other sources of working capital.—Outside that covered by current borrowing, the source of working capital may be found in long-term borrowing as well as in capital contributions by owners or stockholders, either by direct investment or by earnings left in the business and applied to working capital purposes. From a credit standpoint, that portion of working capital procured from the owners is more secure and desirable than that obtained by a mortgage or bond issue. For the latter, in addition to requiring amortization by means of a sinking fund, or otherwise, levies an interest charge against profits, and, incidentally, against working capital, at recurrent intervals—an unavoidable obligation or a default in interest payment leads to very serious consequences. From the economic standpoint it may be assumed also that dividends on stocks and profits to owners are equally obligatory, for, if no profits or dividends are paid to shareholders, the credit of the concern may become impaired. The banker takes profits into account, and the investors in a firm's securities usually take the probable yield into consideration. However, profits to own-

ers, as compared with interest to bondholders, mean a smaller fixed charge against working capital, especially in view of the fact that changing business conditions make necessary the adjustment of dividends to earnings. Summarizing the recognized method of procuring working capital, we have the following:

1. Current Debt.
   a. Short-term borrowing from banks.
   b. Short-term borrowing in open market.
   c. Time purchases. } Deferred payment.
   d. Accruals. }
2. Funded Debt.
   a. Mortgages.
   b. Bonds.
3. Owners' or shareholders' contributions.
   a. Investment direct.
   b. Earnings reinvested.

Costs and sources of working capital.—These methods of procuring working capital carry with them different costs and responsibilities. From the standpoint of costs, current debt involves the following:

1. On bank loans and open market loans, variable interest rates and amounts.
2. On time purchases, indirect cost in loss of cash discounts, if any are granted, which varies with amount of purchases, size or rate of discount, and length of net terms, or higher price paid for goods purchased.
3. On accruals, no direct cost whatever.

Funded debt usually entails the following costs:

1. Interest charges, often lower than on short-time bank or open market loans, but more rigid and permanent.
2. Reserves for sinking fund requirements, or other forms of amortization.
3. Commissions, fees, printing, etc., incurred in selling the obligations.

Owners' investment is the cheapest method:

1. Expense in issuing additional stocks or stock dividends.
2. Reinvesting earnings, no expense.

Sources of working capital and responsibility for repayment.—Responsibility in these measures centers on the liability for payment—that is, the time allowed, and, with it, the varying amount of insistence of creditors on payment. Naturally, accruals in payrolls, taxes, insurance, and interest are the most inflexible kinds of current debt, while time purchases, accounts, or bills payable, given for merchandise, are the most flexible. Loans in the open market are more likely to be pressed for payment at maturity than are loans from banks. In case the earnings or net working capital do not permit the drain of accrued liabilities, recourse may be had to bank and open market borrowing; such is the case, also, when obligations incurred by purchases must be met. Though some may yield, at the urge of temporary need, to the temptations of the open market, for the majority of firms the bank is the final court of appeal for funds. Under the pressure of expansion or tightening money conditions, all sources may be exploited to the limits of their possibility as a means of gaining time on payments, in order that volume of business may be increased or not allowed to suffer. In case the net working capital seems insufficient compared to the current debts, the security market may also be reverted to to increase the working capital. Here the responsibility for repayment of bonds or mortgages is postponed until a more distant future, unless an amortization fund is required, which means rigorous recurrent contributions to the sinking fund at short intervals. If earnings or the net working capital do not warrant such amortization charges, recourse may again be had to banks or the open market, or, if these fail, time purchases may be extended, gaining thereby additional funds indirectly. Finally, owners' investments present no responsibility for repayment.

Credit significance of costs and responsibility for repayment.—It would seem that the credit man should regard the cost of procuring working capital as the primary consideration in determining the advisability of the method used. He

must also take into account the extraordinary amount of shifting from one method to another which is possible to every concern. This search for alternative sources for working capital must at all times be carefully analyzed, in order to understand the conscious or unconscious reasons underlying such practices. It is conceivable that a firm, hard pressed in keeping under control an adequate supply of net working capital, might exploit various alternatives to the utmost, whereas playing off one source against another might indicate prospective trouble. On the other hand, credit opinion will not rest after having ascertained the costs involved in the various methods employed, but will also take into account the rigidity of the demands for payment attaching to these various methods. Naturally, concerns may be assumed to follow the least costly methods, and also, if possible, those which offer greatest leeway for renewal, postponement, or shifting of obligations. Under financial strain, however, these factors might be ruled out, as also in the case of rapid expansion during rising price periods. The consideration of cost may be neglected by a firm when the need for funds is urgent, whereas at other times the degree of rigorousness in demand for payment at maturity might dominate the methods used, since pliability in this demand might be worth an added cost.

The sources from which borrowed funds have been obtained have a great deal to do with the degree of control that the borrowing firm possesses over its inventory as well as over other forms of current assets. It is plain that, if the degree of insistence likely to be exercised by creditors for payment at maturity has been disregarded, the control over current assets might be jeopardized, and the firm would find itself in an awkward position, unless it had left open other sources for borrowing, or was able to work off the inventory or liquidate the receivables.

Variations in net working capital supply.—In the earlier part of this discussion, the statement was made that current debt, subtracted from the total current assets, would leave the net working capital. It must not be assumed that the amount of net working capital is solely determined at any time by the contributions to it from owners' investment or long-time debt. The net working capital of any going concern varies because of a considerable number of influences that tend to increase

or decrease the amount. These cover a wider field than those referred to as emanating from the various sources of working capital.

Let us repeat that net working capital is the difference between current assets and current liabilities, and that it does not necessarily represent owned capital in the business. A firm's total working capital, on the other hand, may be acquired from the owners, lenders, and creditors, who accept deferred payment for services rendered or merchandise sold. The net amount of working capital in the business at any time is subject to great variations. Additions to net working capital result from the following:

1. Stockholders' investment (new contributions) and proceeds used for working capital.
2. Flotation of funded or long-time debt and proceeds used for working capital.
3. Earnings.
   a. In the form of receivables, the profit accruing when goods are sold on time.
   b. In the form of cash, in the case of cash sales, or sales of other current assets, or receivables collected.
4. Marking up the value of merchandise inventory and readily marketable security investments.
5. Building up reserves against taxes, contingencies, depreciations, maintenance, and sinking fund, or amortization of a debt, if left in form of cash or liquid investment.

A reduction in the amount of net working capital occurs under the following conditions:

1. Losses sustained.
2. Cash dividends paid or profits taken out of business.
3. Payment of long-time obligations out of current funds.
4. Purchase of fixed and noncurrent assets by use of working funds.
5. Marking down the value of inventory.
6. Periodical investment of reserves, and, therefore, taken out of current assets, use of reserves for maintenance, depositing of funds in sinking fund.

Significance of changing supply of net working capital. —From the angle of credit information, the change in the net working capital position of a firm should always be interpreted on the basis of the above factors, which work for a decrease or an increase in the margin of safety. Such factors, when discovered, as make for increase, should be carefully set over against those which make for decrease. Sources from which working capital has been acquired, the shifting of sources, and the nature of the various responsibilities for payment, all gather an additional meaning when considered in conjunction with the factors that make for a change in the net working capital position of a concern. Another point must be emphasized, namely, that changes in the amounts of current assets and current liabilities do not necessarily reflect the amount of net working capital. The reasons are:

1. The increase and decrease in the current assets and current liabilities may be equal, and, if so, the net working capital will remain the same. This fact may be illustrated thus:

1st Period

Current Assets = \$300
Current Liabilities = 200, or an excess of \$100.

2nd Period

Current Assets = \$200
Current Liabilities = 100, or an excess of \$100.

This illustration assumes that \$100 of current assets were used to pay off \$100 of current debt. But it must be understood that the net working capital position in the 2nd period is better than in the 1st period, because, on the theory of possible shrinkage of current assets, the latter \$100 of net working capital is an element of safety against \$200 of shrinkable current assets and \$100 of nonshrinkable liabilities; while in the 1st period it stood over \$300 in shrinkable current assets against \$200 of nonshrinkable current liabilities. This relation is adequately expressed by the current ratios—150 per cent in the 1st, and 200 per cent in the 2nd period—although the absolute amount of net working capital does not, in itself, give any clue to this difference in actual working capital position in these two periods.

2. Furthermore, increases or decreases might occur simultaneously in both current assets and current liabilities, as a result of purchase or sale of fixed assets, increase or decrease in funded or long-time debt, additional owners' investment, funding of payables, or purchase of fixed assets by incurring short-term obligations, and still leave the net working capital the same in amount, even though a fundamental change in the composition as well as in the amounts of current assets and current liabilities has taken place.

Factors in the requirements of working capital.—The usual credit judgment of the adequacy of working capital is based on the amount of current liabilities. This is extremely misleading, since working capital is needed for a variety of current expenditures, which the periodical financial statements only sketchily describe. Besides, when reference is made to the requirements of working capital, these requirements must always be regarded as bearing a relation to some other factor or set of factors. There is a confusion also with regard to the meaning of working capital, which might mean any one of these three quantities: (1) the actually owned working capital in excess of current debt; (2) the net working capital in excess of current debt (partly supplied, perhaps, as we have seen, by funded or long-time debt); and (3) the gross working capital, equivalent at any time to the potential accounting value or the market value of the total current assets. Since very little working capital is kept by firms in the form of cash, the reckoning of the amount by means of any of these three measures would furnish an excellent illustration of standing contrast between actual value and potential book value, affected as it is by constantly changing business conditions which alter the value of current assets and therefore the supply of working capital. From the standpoint of short-time credits, if the funded debt which has furnished part of the working capital does not fall due within a year, the net working capital might be considered for practical purposes as equivalent to that actually owned, except that the interest charges, sinking fund provisions, etc., must be counted as charges against working capital. Working capital requirements, however, would have to be so much the greater than if the net working capital were actually owned.

Meaning of gross working capital.—Gross working capital is, on the other hand, the total of current assets, including the differential of net working capital. The relation between gross and net working capital is determined by current debt. Barring changes in working capital (except those occurring as a result of current operations of a business), the net working capital will increase in relation to gross working capital when profits are earned or inventory and other current assets are marked up; it will decrease when losses are incurred or inventory and other current assets are marked down.

Important relations in reference to working capital.—Variations in the supply of net working capital are the result of factors above indicated. These factors may at times operate to produce an excess of working capital and at other times a deficiency. But that does not answer the question as to what the economical, safe, and profitable requirements might be for a given concern. When requirements for working capital are determined, the gross rather than the net working capital is the object of attention, for the net amount is really a safeguard against shrinkage of current assets, or their nonliquidity—meaning the timeliness of their turnover as compared with the maturities of current liabilities. Considering that a concern possesses a certain amount of fixed assets which are engaged in the output of goods, and, therefore, requires the purchase of materials, supplies, labor, etc., the gross working capital is really that which furnishes the necessaries for production and the means by which the output is marketed. Thus the effective supply of working capital as related to fixed assets is the gross amount; it is the amount that must be reckoned with in considering the requirements adequate to meet the needs of the fixed assets. Let us suppose that a firm's net worth just covers the fixed investment and, therefore, it must borrow for working capital purposes. This it might do by issuing long-term obligations. The funds so acquired, in a sense, become its net working capital. Upon the fixed assets acquired by owner's capital, plus the so-called "net" working capital obtained by long-time obligations, the firm is able to get bank or trade credit and thereby increase the working capital to a point of adequacy; but what factors figure in the calculations of working capital requirements? In this connection there are naturally two groups of factors, those that must be taken into

account under normal conditions and those that arise from changing business conditions.

Calculating working capital needs.—Under "normal" (more or less even, or long-time) conditions affecting a firm, calculation of working capital requirements would center in the following factors:

1. Volume of business at the usual prevailing rate of turnover. Naturally, a firm doing $100,000 worth of business a year at a turnover of twice a year would require $50,000 of working capital, while a firm with a similar volume of business, but with a turnover of three times a year, would require only $33,333 of working capital. Also, it is obvious that, rates of turnover being the same, the greater the volume of output the greater would be the working capital requirement.

2. The net terms of purchase as compared with the net terms of sale. If a concern buys goods and materials for cash and sells on time, it would require more working capital to handle a given volume of business than would be the case if the firm could purchase on time and sell its output for cash.

3. The length of manufacturing period. In the case of a manufacturing concern, as compared with a mercantile concern, there exists an added period between the time of purchases and the time of sale, which measures the interval necessary for the fabrication of the product. This fabrication period may be limited by technological factors, as well as by the nature of the product. In this connection, the transportation period from the market of purchase to the market of sale is also important.

4. Degree of equalization possible in the volume of business and production over a year. A concern cannot control the nature of its market, which is conditioned by the nature of the product and the demand for it. Seasonal variations in the sales may be offset by the development of "between season" product, or by the even distribution throughout the year of the total production necessary. The latter method, however, does not eliminate entirely the seasonal influences from the selling requirements, unless by a scheme of datings the purchasers can be induced to take the product some time before the season. Nevertheless, such a policy would not alleviate

demands for working capital any more than if goods had been placed in a warehouse until the seasonal demand began.

5. Facilities for selling or discounting accounts, notes, and acceptance receivables. Any firm can shorten its turnover period by the disposal of its receivables before maturity and can thereby reduce the required working capital. Naturally, the sale of receivables diminishes the profit on merchandise sold in proportion to the discount deducted from the face of the receivables. Whatever this cost might be, it is, however, not an absolute one, for by the sale of receivables the firm gains as follows:

a. Reduces collection expenses.
b. Cuts down costs of credit department.
c. Reduces bad debt losses; not directly, for the firm incurs contingent liabilities; but indirectly, since the debtor will feel more responsible to "outsiders" who might have bought the receivables than he might to the seller, since the latter is usually more lenient in order not to alienate his customers.
d. Saves interest on funds that would otherwise have to be borrowed to meet the working capital requirements.

6. Proportion of owned capital in the business as compared with borrowed capital, either on short- or long-term obligations. If a concern is operating on a liberal debt, it necessarily incurs interest charges, and, in connection with long-term obligations, it might have to meet amortization expenses.

7. Policy of meeting depreciation and maintenance charges, as well as possible contingencies. The policy assumed might be the result of conservatism, of nonconservatism, of the wear-and-tear qualities of fixed assets, or of the perishability of inventory or its susceptibility to obsolescence. In case of eventual depreciation and necessary replacement of some fixed assets, the reserves might be invested in securities or other investments until the replacement becomes necessary, thus not affecting working capital requirements. In regard to reserves against contingencies and maintenance, they might, as a rule, be left directly in the working capital. If so, the requirements naturally should be higher than were reserves set aside and kept apart from working assets.

8. Miscellaneous expenditures that recur regularly, such as insurance, taxes, etc. Property taxes vary with states and with the political subdivisions of states. Insurance premiums are based on the degree of risk, predicated upon the nature of the business.

Determining the variable needs for working capital.—This first group of general factors, which underlies gross working capital requirements, sets the "norm," and must be taken into account as the general foundation upon which calculations must proceed. It is quite significant at the time of starting a business and when a going concern is observed at any particular date. However, a going business meets with multifarious vicissitudes. Its internal affairs must be constantly adjusted to external conditions, and, at times, external factors must be developed or modified to meet certain internal exigencies. So we find that variations in the amount of net working capital, as well as changes in the total requirements, are the rule in the experience of most concerns. Therefore, any analysis of the need for working capital must penetrate deep into the factors from which such variable needs spring.

Classification of working capital needs.—From the standpoint of credit capacity as well as of sound financial policy, the net working capital should equal a safe and profitable margin. So working capital requirements exact not only an amount sufficient to cover "average" needs, but also an amount which constitutes an increase fund against shrinkage of current assets, or unfortunate junctures in turnover of current assets. Working capital requirements are of several types from the standpoint of determinateness. This basis of classification is exceedingly important. It reduces the calculations to the basis of a sliding scale—from the most certain, as to time and amounts, to the least certain, as to time and amounts. It will also be shown later that this scale runs all the way from those factors that vary least to those that vary most in calculating working capital needs. This does not preclude the necessity to account at all times for individual peculiarities.

The more or less determinate needs.—Capital funds, originally expended for the various assets acquired by a business concern, never reappear in a lump sum unless the firm is liquidated, or part, or all, of it, is sold. Funds used to pur-

chase fixed assets are "sunk" for indefinitely long periods; while, on the other hand, funds used for current purposes, such as materials, supplies, labor, etc., reappear in a stream of cash income. Although this current stream of cash income contains increments representing reproductivity or profit amounts, as contributions from productive fixed assets, all charges incurred by fixed property investments present constantly recurring claims against working capital or income. These charges are generally known as overhead or supplementary costs. It is found that, in calculating working capital requirements, these needs recur constantly and with considerable degree of determinateness and amounts. These include:

1. Interest on long-time obligations and sinking fund payments or other amortization plan which provides for a gradual liquidation of the indebtedness. For example, a firm with $100,000 of funded debt at 6 per cent, maturing in twenty years, with gradual amortization features, can easily calculate the amount of payments due at periodical intervals.
2. Taxes—local, state, and national. Most tax measures are passed by the various political units at two-year intervals. Information as to rate and additional data on the value of assessment, also obtainable, affords easy means for determining the needs for taxes.
3. Depreciation and maintenance. Nearly every going concern figures on a definite rate of depreciation in its fixed plant investments, as well as on certain maintenance charges required to keep its business at a normal degree of efficiency. Difficulties might be experienced in this connection, if, for example, the machinery used is susceptible to innovations and reaches suddenly a state of competitive obsolescence. But this is a charge that can be reduced to a remarkable degree of certainty.
4. Rent. Leases usually run over a period of years and the rentals can be accurately gauged as costs.
5. Insurance premiums. Insurance of a permanent nature against fixed property, etc., recurs with pronounced regularity and any change in amounts can be easily apprehended.
6. Salaries. This item in a well organized concern can also be calculated with a high degree of accuracy. Amounts and due dates present little difficulty.

These working capital needs vary chiefly with the increase of fixed assets and funded debt. Taxes and insurance will also increase or decrease with the value placed, from time to time, on the fixed assets; salaries fluctuate somewhat with the cost of living and, therefore, with the changing price level over short periods; nevertheless, calculation of the demands for working capital emanating from these sources can be made with considerable accuracy.

The more or less indeterminate needs.—In regard to prime costs, which consume by far the greater portion of working capital, considerable variations and, therefore, greater uncertainties, exist. The factors in overhead costs vary perhaps very remotely, if at all, with the change in the volume of current operations. Prime costs, on the other hand, are more indeterminate as to time and amounts. The variableness of prime costs is caused by three things:

1. The fluctuating prices of prime costs.
   Due to:
   (*a*) Changing prices for materials.
   (*b*) Changing rates of wages.
   (*c*) Changing rates of interest on bank loans.
2. Cyclical, as well as seasonal, fluctuations in the personal efficiency of labor and management.
3. The variations in output and volume of business.

Costs and working capital requirements in business cycle.—While overhead or supplementary costs are relatively constant during the short periods over which working capital requirements are estimated, prime costs, on the other hand, not only vary over short periods, but also in different degrees during the several phases of the business cycle. That is, if considered in relation to the volume of business done, or output, the several items of prime costs may vary at times proportionally, at other times progressively, and again degressively. Furthermore, the individual prime costs vary not only in their relation to each other, but also in relation to the volume of business or output. It must be repeated, that these variations exist primarily, because of the business cycle and because of seasonal changes in demand.

Other considerations in costs.—Any discussion of the behavior of prime costs within the business cycle must be undertaken with the qualification that every enterprise manifests its own peculiarities with regard to prime costs. However, since the prime costs are, to a large extent, determined by competitive conditions in the general markets, no doubt these peculiarities may not be so important as usually regarded. Of course, business and financial policies of individual firms may modify to a considerable extent the influences of general conditions on its prime costs. Such modifications prevail especially in regard to labor management and hedging operations in purchases, as well as in the methods of obtaining working capital.

Naturally, variations in prices of prime costs, as well as in efficiency of labor and management, do not depend closely on volume of business or output for their influence on working capital requirements, though variations in efficiency of labor and management are more closely associated with these than the others. These price variations occur in the general markets for materials, labor, and bank loans. The total amounts paid for materials, labor, and bank loans, on the other hand, are further dependent on the volume of business and output. Differentiation is necessary here between volume of business and output. If the product moves smoothly through the production process, that is, if no stocking up of materials or products occurs, the output is commensurate with the volume of business. However, when, on account of unfavorable marketing conditions, or of a tendency toward rising prices in either the finished product or the raw materials, a stocking up of product or materials occurs, the output may not be commensurate with the volume of business. When inventories are stocked up, the amount expended for prime costs remains unavailable longer, which affects the supply of working capital. This is, however, a problem of turnover, which deserves special treatment in a subsequent section.

Estimating working capital requirements.—The problem of calculating working capital requirements on the basis of prime costs is an extremely complex one. Given, however, an estimated volume of business, let us say, for the period of a year, and seasonal variations in sales as an additional factor, the working capital requirements can be calculated approxi-

DEPRESSIONS

	Output	*Volume of Business*	*Price of Materials*	*Rates of Wages*	*Efficiency of Labor*	*Interest on Bank Loans*
A.	Low, but often increasing in later phases of depression.	Commensurate with output. No stocks worked off, selling prices declining.	Low, falling with tendency to rise.	Falling; but payrolls increase with the fuller employment.	Increasing; results in greater output per man and per dollar of payroll.	Low and falling, while smaller loans are required—overstocks are reduced to liquidate old loans, which are not often offset by new loans. Receivables are also liquidated and working capital freed for current operations.

B. Prime costs usually decrease amount of working capital required, since they assume degressive movement in relation to output and volume of business.

REVIVALS

	Output	*Volume of Business*	*Price of Materials*	*Rates of Wages*	*Efficiency of Labor*	*Interest on Bank Loans*
A.	Increasing.	Increasing, with moderate degree of stocking up of inventory. Selling prices beginning to increase.	Rising more and earlier than selling prices.	Low, but with tendency to increase less than selling prices or prices of materials.	Good, but tendency to decrease, because of untrained labor employed.	Still low, with tendency to increase moderately. Old debts liquidated as well as receivables. New loans increasing moderately.

B. Prime costs are increasing, approximately in equal proportions, the movement being now somewhat less retrograde in relation to volume of business and output.

PROSPERITY

	Output	*Volume of Business*	*Price of Materials*	*Rates of Wages*	*Efficiency of Labor*	*Interest on Bank Loans*
A.	Increasing.	Increasing and stocking up. Selling prices rising rapidly.	Rising rapidly.	Increasing; but less than prices of raw materials and product.	Slowly diminishing.	Increasing; with increase of loans. Proportion of cash to time sales increasing.

B. Prime costs are increasing almost proportionally to output, though degressively with reference to volume of business.

APPROACHING LIQUIDATION

	Output	*Volume of Business*	*Price of Materials*	*Rates of Wages*	*Efficiency of Labor*	*Interest on Bank Loans*
A.	Increasing rapidly. prices show retarding increase.	Increasing rapidly, with larger overstocks. Selling	Tendency to stop increasing, and often declining.	Increasing rapidly.	Decreasing.	Rapidly increasing. Time sales increasing.

B. Prime costs are increasing progressively with relation to both output and volume of business.

LIQUIDATION AND READJUSTMENT

	Output	*Volume of Business*	*Price of Materials*	*Rates of Wages*	*Efficiency of Labor*	*Interest on Bank Loans*
A.	Rapidly diminishing or totally quiescent.	Decreasing less than output. Selling prices falling.	Rapidly declining.	Decreasing and laborers being discharged.	Increasing rapidly to hold jobs.	Rising, with noncollectible receivables and overstocks of merchandise. Overhead costs continue while profits are low or vanishing.

B. Prime costs, as a rule, are lessening, although influence of heavy debts and recurring overhead charges persist as demands on working capital. Liquidating high price inventories drain existing supply of working capital and losses sustained also tend to diminish it.

mately. The seasonal variations should be taken into account on two considerations: (1) Is production activity to be spread as evenly as possible over the year? (2) Is production to be undertaken as the seasonal demands require? Having figured the more or less constant needs for working capital that the overhead costs estimates furnished, it is then necessary to center attention on prime costs. The first step should aim to separate the materials required and the labor necessary to work up the materials. Provided plant capacity permits, the seasonal demands might be evenly distributed so far as production is concerned. In fact, less plant capacity is required if this is done. The budgetary aspects of the problem suggested at this point must be deferred to a later chapter; but it is pertinent, in this connection, to consider the usual variations in prime costs within the business cycle of which all calculations must take account.

The scheme on pages 348 and 349 recapitulates in general terms the behavior of prime costs during one complete swing of the business cycle. Experience and data gleaned from the past in respect to these prime costs will be of great service to an enterprise in outlining its relation to the general business cycles, and there could be no better basis for the calculation of working capital requirements than the behavior of prime costs, in the light of their variation, as a result of the rhythmic fluctuations of business.

Grading costs according to determinateness.—We have thus far analyzed the sources of working capital, the variations in net working capital, and the requirements of total working expenses, as these are affected by the various costs which go to make up the total expenses to be met by working capital. It was found necessary to treat the costs in their order of determinateness, since working capital calculations are facilitated by a knowledge of the certainty of amounts and time of recurrence in payment of the various costs. It was found that costs can be graded in this respect approximately as follows:

From most determinate to least determinate:

Supplementary or overhead costs:

Interest on funded debt and amortization.
Taxes.

Depreciation and maintenance.
Rent.
Insurance.
Salaries.

Prime costs: [1]

Wages.
Freight.
Advertising and commissions.
Interest on bank loans.
Materials.

Requirements for working capital cannot, however, be adequately worked out on the basis of costs alone, for volume of business and turnover of inventory and receivables also play an important rôle. It, therefore, becomes necessary to turn to the nature of the investments of working capital to complete the calculation.

Use of working capital.—The sources from which working capital has been obtained, the variations in the net working capital, and the factors that must be considered in calculating the total requirements (which, as we have seen, embrace a group of determinate and a group of indeterminate costs), all are more or less interdependent. However, the manner in which it has been used and the conditions attendant and following its investment produce additional problems in working capital management. As we have seen, the variations in requirements arise chiefly in relation to prime costs, since other costs obtain quite constantly over short periods at least. It is necessary, therefore, to consider further variations in working capital requirement, contingent on its use, before attempting a coördination between cost variations in requirements and sources—a coördination which will adequately determine what control is exercised over the working capital position, or what control might be possible in the face of the vicissitudes of business, and so may help us to a proper credit judgment.

The factor of turnover in working capital assets.—To look at the problem of requirements from a different angle, let us take the viewpoint that every firm has a constant stream

[1] Hansen, "Prime Costs in the Business Cycle," *Journal of Political Economy*, February, 1924, pp. 1-15.

of income and expenditures. This stream of income and expenditures may not only include the outlay for various undertakings and the receipts from their yields, but also the incomes from temporary borrowings, as well as from long-term borrowings and stock issues, and the outgo for the liquidation of current loans, as well as of long-term debt. The latter, from the standpoint of both income and outgo, occur only occasionally and intermittently, while short-term borrowings as well as the payments thereon are more or less continual. It must be clear from the foregoing that this stream of outgo flows into certain channels of costs, such as the so-called overhead or supplementary costs, with considerable regularity both as to amounts and time, or intervals, at least over short periods; while, on the other hand, the major portion of the outgo stream flows into channels of prime costs—a more variable lot from the standpoint of size and interval of payments. There is, however, another aspect to the calculations of working capital requirements, and that is the length of time that the various current expenditures remain in the phase of production for which the outlay was made. This time and phase element has been previously referred to as turnover, and was also discussed in connection with the prime costs and their relation to output and volume of business. We have, therefore, certain additional factors to analyze:

1. Those that figure in the firm's rate of turnover of working capital, which might be affected by:
   a. Stocking up and marking up inventory.
   b. Selling off and marking down inventory.
   c. Actual increase or decrease in sales.
   d. Actual increase or decrease of receivables due to:
      (1) Changing terms of sales.
      (2) Changing proportion between time and cash sales.
      (3) Collection policy and discounting of receivables.

2. Those that vary the relation between output and volume of business, which vary because of:
   a. Stocking up finished goods or goods in process.

Analysis of factors affecting turnover.—The whole problem of working capital investment, in connection with its possible requirements, rests on the liquidity and potential liquidity of current assets. From the standpoint of credit analysis, care must be taken to rule out certain business policies that affect the turnover. Marking up or down the value of inventory on the books affects turnover, but this practice does not necessarily mean that working capital has been put into the business or taken out, or that the turnover has necessarily increased or decreased. It is obvious that costs occur continuously or in a stream, and that income behaves likewise. Thus, the nearest estimate as to the lapse of time between the initial investment of working capital (for example, that expended for labor and materials, or for various overhead charges, etc.), and its recovery from the productive investment (when receivables have been collected or cash sales receipts occur), must take into account a possible disproportion, at any given moment within that lapse of time. It remains now to seek for the causes of this disproportion.

As we have seen, tampering with the inventory price throws a smoke screen in the eyes of the credit analyst. This may occur not only when a firm's turnover is to be gauged, but also when its effective supply of working capital is under scrutiny. But let us look at the actual bona fide reasons for the disproportions above referred to. In periods of rising prices, a firm may stock up raw material inventory, as well as finished stocks. This stocking up has two effects: (1) it lengthens the lapse of time between outgo and income; (2) it produces a gap between output and volume of business or sales. This practice ties up working capital and raises the proportion of working capital to output and volume of business. Such advance purchasing and producing should look toward the ultimate liquidation before the seller's markets end, or should be supported by a proper hedging policy which is possible at least in some lines of raw materials—for example, grain, metals, chemicals, textiles, etc. Organized exchanges permit such hedging. In period of rising prices, also, the handling of receivables will modify the lapse between expenditure and income. Net terms may be lengthened or shortened, cash sales may vary with time sales, collections may be pressed or let drift, and receivables may be sold. The latter, again, is

an abnormal interference with turnover. Rising price periods usually witness a shortening of net terms, and a tendency toward more cash sales, while the collections generally drift. The seller's market induces competition among buyers, so that credit granted is often more promptly paid. The shortening of the lapse of time covered by receivables, in many cases, does not offset the lengthening tendency manifested by the inventory part in the interval. In declining price periods outgo is cut with the exception of overhead, but income is also cut. The lapse of time between overhead and income becomes extended. The excessively high-priced inventories—raw, in process, or finished—become "frozen" working capital. The prime costs, in periods of rising prices, have piled up in inventories, while selling on credit is amplified and output and volume of business assume a distorted relation, leaving the liquidation to "fray out at the end," so to speak, with proportionately low incomes, to which all costs must in some degree be adjusted.

Let us assume that surplus funds are used in security investments. They may be left so invested until the need for more working capital is felt some time during a subsequent revival. Such a practice produces a disparity in the lapse of time between outlay and income, or (in depressions) between frozen assets and income. A rapid liquidation of tied-up working capital may be obscured from view by the accumulation of surplus working funds in investments of income-yielding securities, as frequently happens.

Turnover and business vicissitudes.—Theoretically, any concern will demonstrate a normal condition when its costs are smoothly or continuously met by the receipts from sales which take the output as it occurs.[2] If a concern is subject to seasonal

[2] "In Regard to Inventory," by Fred W. Shibley, vice president of Bankers Trust Co., New York:

"A commercial credit extended to a manufacturer, based in part on inventory of materials and supplies, presupposes that this inventory is in constant process of conversion into cash or receivables, or, in other words, is being constantly turned over in the ordinary course of trade.

"That inventory is most liquid which can be thus converted or turned over in the shortest period of time.

"That part of an inventory is unbalanced which does not lend itself to the current process of turnover and represents overstock or little used and obsolete

influences, then, theoretically, a normal condition obtains when, at the end of a yearly period, after all seasonal influences have been accounted for, the total sales have moved off, into the market, the entire output—an output might have been distributed evenly and economically over the whole year. This theory might be applied also to the cyclical period. It would be sound business policy to increase output at low and moder-

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materials. Such items reveal themselves quickly to the intelligent manufacturer and it is his constant endeavor to keep his inventory in balance.

"A merchandise or materials inventory can cover a number of sore spots in a manufacturer's statement of current assets and the banker has need of the utmost vigilance to determine to what extent credit should be extended on inventory values.

"It has been a common practice on the part of bankers to assume that current indebtedness should not exceed in amount the items Cash and Net Receivables, the item of inventory to be considered as margin of safety.

"Or, again, some bankers arbitrarily place a value of only one third its amount on an inventory in considering its liquidating value. This is a mere rule-of-thumb method and far from intelligent.

"It is my belief that the banker can be of much assistance and render a real service to his manufacturing client by insisting on a comprehensive analysis of the inventory item accompanying the financial statement which is presented to him as the basis of a loan, and this statement should reveal the amounts of inventory values which are semiobsolete, obsolete, or out of balance.

"Manufacturers in great number have not studied their inventories as they should have done. They have been accustomed to purchase more than their current turnover requirements when prices appeared attractive or when alarmed at a possible shortage of materials, and in so far as they have followed this practice they have speculated in their purchases. Bankers should say firmly to such clients that funds for such speculative purchases must be provided from capital account and not from current borrowings, the very essence of a current commercial loan being that it shall be represented by genuinely current assets.

"The fundamental of good manufacturing practice is to convert raw materials at current market prices into finished goods sold or to be sold at current market prices with a fair margin of profit in between.

"No objection can be made to a manufacturer taking advantage of extremely low prices for raw materials by purchasing a supply for two years if he so desires, but, as has been said, such purchases should be made from surplus capital reserve and not from the Current Asset account representing strictly the business turnover and generally considered based on a ratio of two of current assets for one of current debts. Over and above that ratio let him pile up raw materials and finished goods if he has the surplus funds with which to do it. The profit will be his profit if the speculation is successful. His banker will receive none of this profit. The loss should be his loss if the speculation results adversely. His banker should not be compelled to carry him through a liquidating period until he shall right himself again.

"It is reasonable to suppose that manufacturers and merchants, as well as bankers, have learned this inventory lesson within the last three years so well

ately rising costs, but only in proportion to the possible sales which will take this output off into the market, before falling selling prices set in. Conservatism might have permitted sales to work off all overstocks, and, thereafter, the adoption of a hand-to-mouth policy, or selling simultaneously with production, until reserves set in. The latter method might be the most profitable, for it would forestall the acute losses in inventories during liquidation. The fact that practically all concerns overestimate the length of a prosperity period is evident from a careful analysis of financial statements prior to a price decline. Such an analysis will invariably point to the following conclusions:

1. Most firms pass through a period when heavy stocking up of inventory is practiced.
2. Subsequently, an attempt is evident to work off the overstocks in the market.
3. The heavy volume of sales runs well into the phase of cumulation of prosperity, when signs of an approaching liquidation are evident.
4. The interval between the time when sales are beginning to take off output and overstocks and the time when markets become congested and prices begin to fall is rarely sufficient for the majority of concerns to clean their shelves of high prime cost inventories.

In the case of receivables, the other major current asset in which working capital is invested, the tendency is always for the volume to increase. Such a condition is a natural concomitant of overproduction or overstocking of inventory. As soon as a buyer's market becomes imminent, time sales increase. Such seems to be the law of the market.

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that they will not forget it for at least a decade. It is an old lesson that must be learned by each generation. Fundamentals of business are as basic as the laws of nature. Good manufacturing practice, good merchandising practice, and good banking practice are terms known to business as realities. What is not good is bad, and the penalty of all bad practice is disaster, except in rare instances when a gambler in business gets away with a speculation.

"'Know your inventory' is a slogan that should be in every manufacturer's and merchant's mind constantly. They will find that the patient, untiring, and intelligent study of this item will enable them to accomplish what every honorable American business man most desires, namely, to build a business on such sound economic principles that it will bring to them honor and prove to be an enduring source of profit."

The principles of management of working capital.—Working capital that is to be managed might, as we have seen, constitute entirely an owned supply, or it might have been obtained by borrowing either on short-term or long-term obligation; or, finally, it might represent a safe and profitable division of the supply between owned and borrowed capital. Again, working capital might merely represent increased valuation of assets, for example, inventory. In such a case, no additional working capital funds have been acquired and invested. The soundest method of supplying working capital for a business is by obtaining the actual funds and expending them through the various productive, prime, and supplementary costs. Variations from this method might occur temporarily when the costs may precede over a short period the expenditure of funds; for example, when accruals occur or purchases are made on time.

Reasons for borrowing working capital.—Business enterprises may not wish to supply all their required working capital by means of owned funds, at all times, for the following reasons:

1. Inability to obtain a sufficient amount.

2. Variations in output, volume of sales, selling prices, and cost prices require a commensurate fluctuating amount. These variations occur as a result of seasonal and cyclical changes in volume of business and prices. Owned working funds would have to be sufficient to cover the peak requirements. The most excessive demands would occur between these peak requirements and the lowest needs in times of beginning revival. This amount would be quite great, covering the interval of a business cycle, because of the differences in requirements at the crests as compared with those obtaining in the troughs of cycles. Funds, therefore, would lie idle or have to seek other forms of investment in the meantime.

3. Current business opinion regards borrowing as more profitable if combined with owned funds. This might be mathematically demonstrated as follows:

Assume a concern does $100,000 of business a year. Assume the profit on total business equals $10,000, or 10 per cent a year.

Case I.—If the owners contributed $20,000 and $30,000 were borrowed, the owners would receive $10,000 less 6 per cent on $30,000 (interest on borrowings), or $10,000 — $1,800, or $8,200. This would equal 41 per cent on the owner's investment. If the owners had contributed $30,000 and $20,000 had been borrowed, it would equal 29.3 per cent. This example assumes a turnover of capital of twice a year.

Case II.—Let us assume that the volume of business drops to $40,000 a year with the rate of turnover the same and no profit made. The business can now dispense with the $30,000 borrowed working funds under the first of the above alternatives. Although it makes no profit, it has, nevertheless, reduced its interest charge.

If we assume, however, that the firm had obtained all working capital required from the owners, the latter would have earned only 20 per cent on their investment by contributing all the required working capital. Besides, after the volume of business dropped to $40,000 a year, there would naturally be a surplus of $30,000, assuming no losses were incurred. If this amount remained free surplus for a year, and was put into bonds, which, let us assume, yield 7 per cent, after including appreciation—which normally results, as interest rates decline in periods of depression, and in the early phases of revival—the entire returns for two years would then be 20 per cent + 7 per cent or 27 per cent; while, in the two cases above, when borrowing was undertaken, the yield was 41 per cent and 29.3 per cent respectively. This illustration assumes that no losses occurred and no profits were made in the period of liquidation.

Folly of relying solely on borrowed funds.—The folly of relying exclusively on borrowing for working capital is clearly recognized by all concerns. If such borrowing were all current, or over short terms, no net working capital would exist. However, the policy of marking up inventories and retaining profits in the business might sooner or later be the basis for the accrual of a net working capital position. In case long-term borrowing furnishes a portion, or all, of the requirements, a net position would become obvious, but would not represent owned capital. This policy might be extremely profitable, but would very likely be unsafe, since it leaves no margin that

may serve as a buffer against losses. Borrowed funds cannot be dissipated with impunity.

Factors to be considered in determining proportion of owned to borrowed funds.—The common practice in meeting working capital requirements is to combine borrowed funds with owner's contributions. But what the proportion shall be is the chief problem in working capital management. The principal factors that must be taken into account are:

1. The sources of working capital that are utilized, or that may be appealed to, regarded on the basis of cost and responsibility for payment at maturity.
2. The lapse of time between outlay and income.
3. The proportions in the combination of the various items of costs.
4. The variations in the output, volume of business, and price of prime costs.

The above factors are subject to control in a varying degree. Sources for working funds are generally limited to the bank or trade credit, for small enterprises, while larger concerns possess, additionally, the open market, finance companies, more banks, and, finally, the security market. The lapse of time between outlay and income is a question of management of production, current assets, and sales. The proportion between the various costs is to a large extent uncontrollable, for it is determined by the nature of business. The variations in output, volume of business, and price of prime costs vary in respect to control. Prices of prime costs are subject to very limited control, principally in matters of efficiency; the output and volume of business may be as uncontrollable as the motive to increase profits.

How to determine minimum needs.—In the calculation of working capital requirements, the minimum needs consist of the following (which might also be regarded as the permanent needs):

1. Supplementary and overhead costs, their amounts and intervals of payment.
2. Average minima of prices of prime costs in relation to output and volume of business, in periods of depression, or in

the early phase of revival, and also at the time when the production process is continuous from outgo to income.

These more or less permanent needs can be approximately determined from the past experiences of an enterprise. Sound business and financial policies will provide sufficient working capital from owners' contributions to meet these minimum permanent needs. Theoretically, this residual amount will represent both the net and the total working capital. Subsequently, the variable factors will work their influence on the working capital requirements, namely, variations in price of prime costs, efficiency, output, volume of business, and also in inventory and receivables policy. The original minimum or permanent needs, as above set forth, will then become subject to change. This minimum will no longer represent total working capital but merely the net amount. Briefly, the question becomes one of keeping the relationship between net and total working capital a safe and profitable one. We have seen, in an earlier section of this chapter, what influences vary the net amount of working capital. Under stress, inventory might be marked down; while, on the other hand, inventory might be marked up, in good times. Reserves may be built up, or used, or invested, etc. We find, then, that the net working capital may be subject to rather confusing influences which obliterate the possibility of making a correct estimate of its actual position.

Guiding principles in estimating requirements.—Calculating the minimum amount of working capital required to meet the regularly recurrent and fairly constant overhead costs, over a period of time, and the approximate minimum for current operating purposes, or such amount as is necessary to handle the output and volume of business when prime costs are at their lowest and with no stocking up of inventories or receivables, the latter is the result of conforming to the usual terms of sale prevailing in the industry. The situation usually exists in the closing periods of depression, or in the earlier phases of revival. Following such an estimate of requirements, which should be covered by owner's contributions, the variations must next be accounted for. These are, first, the seasonal, and, second, the cyclical factors. An economical and profitable fiulfillment of the seasonal demands for working

capital might be had in borrowing over short periods from banks, or in such trade credit as is possible to obtain with the various purchases. This policy seems reasonable in the light of the fluctuating position of the investment market, which might at times forbid a safe and profitable investment of surplus funds between seasons. However, the seasonal requirements for working capital might be met in periods of depression and revival and, in the later phases of liquidation, in the case of well-managed concerns that incur small losses at that time, from the same sources that are used to meet the cyclical requirements. As we have seen, cyclical variations in output, volume of business, and prices of prime costs require an additional amount of working capital, equivalent to the difference between the total required, from depth of depression to the peak of prosperity, and the residual amount required during a depression, after readjustment has been accomplished. The question may arise as to how much of the extra working capital required because of the business cycle shall be furnished by the various sources from which it is obtainable. What the total extra amount will be is conditional upon the proportion of materials to labor costs, the volume of business, the output, and the inventory and receivables policy of the concern. The probable trend of the prices of materials and labor, as well as that of indirect efficiency measures, can be obtained for past years. The probable trend of volume of business and output can also be approximated. The extent to which inventories may be safely and profitably built up, and the point to which receivables should be carried, is also subject to estimate on the basis of data from past cycles. Once this is determined, what should guide the policy of furnishing working capital? If a firm is not figuring on expansion of fixed assets, which would require additional working capital, and if the business is a fairly profitable one, the reinvested earnings may build up a net working capital position, which may permit borrowing on short-term obligations all the additional working capital required during the upswing of the business cycle. Especially would this policy be possible if the turnover were fairly rapid. When, however, the business is only moderately profitable, or is a low-profit producer, and the turnover period is rather long, then it would be natural to expect that reinvested profits cannot bulk large, and, therefore, that the net

working capital cannot be improved from that source. Under such conditions, other sources besides current borrowings should be considered. It might be well to acquire more permanent working capital, by means of long-time obligations. If this source is appealed to, part of the funds required during the cycle upswing are provided for, and this, at the same time, will support current borrowing for the remainder required, in view of the improved net working capital position. Whether such added funds required should be procured by means of stock issues, or owners' direct contributions, depends on the relationship already existing between long-term obligations and net worth and fixed investments. Often the state of the investment market must be considered before definite decision can be made on this question. Moreover, it might be relevant to become acquainted with such matters as whether the concern's financial policy is to do business on a proportion between borrowed and owned funds which might be considered as safe and profitable for that particular enterprise.

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Bliss, "Protection of Working Capital," *Management and Administration,* June, 1924, pp. 653-658.

Gerstenberg, "Financial Organization and Management of Business," Chapters xxiii, xxiv, xxv.

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Chapter XIII

CREDIT ANALYSIS AND PRINCIPLES OF BUDGETING

Introduction.—This chapter is written with the object of stating the factors in the problem of budgetary control. A clear comprehension of the principles of business budgeting is of great importance in determining credit risks. In fact, the estimates and forecasts necessary for budgetary control are closely allied to credit risks. Therefore, knowledge of the general principles of budgeting serves effectively in credit analysis.

Relation of budgets to credit.—Futurity in credit implies that the financial performance of a business in the future will successfully liquidate the debt. The individual or firm to which credit is granted expects to use the funds or goods so obtained either for obtaining pecuniary profits through the increase in volume of business, or for maintaining a *status quo* with respect to the volume of business done and financial position. The latter purpose may involve certain alternatives, as, for example, liquidating old debts by new forms of borrowing, renewing obligations to meet permanent capital requirements, offsetting losses, or meeting higher costs incurred as the result of a rising price level, etc. In other words, the above twofold purposes for incurring obligations might be summarized as those for expansion, and those for maintaining a *status quo*. The budget is a condensed business plan projecting expected business and financial performances into the future. It reveals the purposes for which borrowed funds are used in a business. It unfolds the estimates, the objectives, and intentions of the spirit of enterprise behind the business organization, and, therefore, it reveals the motives behind credit applications. The credit man, above all others, should closely scrutinize budgetary plans of debtors, if obtainable, and he should use his influence to gain the adoption of business budgets by the debtors.

Value of budgeting to mercantile house.—From the standpoint of the mercantile house or industrial concern, which sells goods on time, future planning on the part of the buyers inevitably leads to a better control of the business and consequently to more equal collections for the sellers. Budgeting gives the buyers a more accurate basis for their purchasing policy, as well as for their revenue estimates, and thereby places their financial requirements in the light of facts. This more efficient basis for estimating need for funds offers the possibility of meeting the outgo in a less sporadic fashion, especially such outgo as represents purchases of materials. The influence of this more effective financial control on the part of the buyers will be reflected obviously in more even collections by the sellers of goods on time.

Advantages of business budgeting to banks.—From the point of view of the banker there are similar advantages to be gained from business budgeting. The custom followed by banks of granting a "line of credit," usually for the period of a year or less, offers potent arguments in favor of requiring all financial statements submitted with credit applications to be supported by a budget covering the period over which the "line of credit" is extended. The continuous use of bank funds by a business concern, upon a "line of credit," renders the maintenance of liquid banking assets very difficult. Especially is this true in view of the relatively high proportion of commercial banking funds going into investment use.[1] Furthermore, the extraordinary importance of determining a sound inventory policy, particularly in the closing phases of prosperity, as well as a reasonable fixed expansion policy, demands that such policies are crystallized in form of budgetary plans. The bank's copartnership in a business client's interest should induce a closer insight into the future plans of a business, thus, not only safeguarding credit but also lending more weight to business stability.

Budgeting and business control.—Returning now to the effect of budgeting on the control of the business enterprise, it must be clear that budgetary planning has certain important results:

[1] H. G. Moulton, "Commercial Banking and Capital Information," *Journal of Political Economy*, Vol. 29.

1. It leads to a scientific method of presaging the future of a business.

2. It exacts a basis in figure and fact upon which all estimates are made.

3. It induces sound expansion policies, since capacity is coördinated with scientific estimates of the future volume of business.

4. It enforces thought-out purchasing and production policies, which have regard for the seasonal and cyclical changes in business as well as for price changes.

5. It urges upon the business organization an efficient coöperation between all departments, including financing, purchasing, production, selling, and expansion.

6. It affords a beneficial control over all business operations, in that all financial requirements are adequately and efficiently met as a result of coördinating revenues with expenditures.

7. The concern becomes subject to real control through the checking up of all estimates in the light of actual performance at regular intervals and through the definite allocation of responsibility for failures.

The above seven cardinal points are not mere visionary claims for budgetary control, but a careful statement of the results obtained by many firms that have adopted budgets.[2] It is patent that the success or failure of a concern is evident in its financial performance, or in the financial results it has obtained.[3] Many business men focus attention on the pecu-

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[2] Howard Coonley, "Controlling an Enterprise through a Business Cycle," *Harvard Business Review*, July, 1923.

[3] Bureau of Commercial and Industrial Affairs, Boston Chamber of Commerce, in a pamphlet, "Budgetary Control for Business," gives the following instructive outline on the "Purpose and Scope of Budgetary Control":

A. Results to be Accomplished through Budgetary Control.
Budgetary control, if properly executed, accomplished the following results:

1. Coördination of Sales and Production. (The points here brought out with reference to coördination of sales and production in a manufacturing business apply as well to coördination of sales and purchases in a mercantile business.

a. By estimating sales possibilities and planning production to produce the goods necessary to meet these possibilities.

niary results achieved and are inclined to ignore the fundamental factors in the business, such as policies of expansion,

b. By limiting production to the amount necessary to meet probable sales demands as shown by the sales estimate and thus preventing an excess inventory of finished product.

2. Formulation of a Profitable Sales and Production Program.
   a. By determining the lines of goods most desirable for a well-rounded sales program and adapting production, in so far as is consistent with the following paragraph, to produce the necessary quantity of these lines.
   b. By determining the lines of goods most desirable for a well-rounded production program and planning sales, in so far as is consistent with the preceding paragraph, so as to sell the amount of these lines necessary to secure economical production.

3. Proper Control of Expenditures.
   a. By requiring the preparation by each department head of an estimate of the expenditures of his department during the next budget period.
   b. By requiring the submission of these estimates to the Advisory Committee (a committee composed of the chief executives of the business) for consideration and approval.
   c. By the prohibition of any expenditures in excess of the departmental estimates without the permission of the Advisory Committee.
   d. By requiring the submission of monthly reports showing a comparison between the actual and the estimated expenditures for the month.

4. Formulation of a Financial Program.
   a. By estimating cash receipts based on the sales program and the estimate of collections.
   b. By estimating cash disbursements based on the production, purchasing, plant and equipment, and departmental expense budgets.
   c. By determining the excess of disbursements over receipts and the preparation of a financial program which will secure funds to provide for this excess.

5. Coördination of All the Activities of the Business.
   a. By the preparation by each department of an estimate of its activities during the budget period.
   b. By the studying of these departmental estimates by the departmental executives and the Advisory Committee.
   c. By the modification of the activities of each department to the end that they coördinate with the activities of each other department.
   d. By the preparation of an estimated balance sheet and an estimated statement of profit and loss showing the anticipated results of the operations provided for by the budgetary program.
   e. By the formulation of plans and policies which will make possible the attainment of the estimated results as shown by the financial reports prepared in the preceding paragraph.

production, purchasing, and selling, which obviously delimit the financial achievements. Lack of attention to these factors can be attributed to one essential reason, namely, the partial or complete absence of necessary data upon which all business control is necessarily predicated. Purchasing, production, selling, and expansion are all closely related operations, and should be considered as such in any scheme of business control. Furthermore, the financial element pervades all these opera-

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B. The Scope of the Budget Program.
The scope of the budget program is indicated by the statement of its purpose. It includes all the activities of the business. It involves the following:

1. Preparation of an Estimate. (The estimates suggested here are those required by a manufacturing business. The estimates for a mercantile business can be easily determined by analogy.)

   a. Sales.
   b. Purchases.
   c. Production.
   d. Labor Cost.
   e. Manufacturing Expense.
   f. Plant and Equipment Cost.
   g. Administrative Expenses of Each Department.
   h. Selling Expenses of Each Selling Unit.
   i. Funds Required to Finance These Estimates.

2. Coördination and Approval of These Estimates by a Central Authority.
3. Monthly Reports Making Possible Control and Revision of the Estimates as Approved.

C. The Limitations of Budgetary Control.
It is as essential that the limitations of budgetary control shall be understood as that the benefits which may be derived from it may be realized. These limitations may be stated as follows:

1. The budgetary program is based on estimates. Estimates cannot be made which are entirely accurate, and consequently they must be used with judgment and not followed arbitrarily. It is also necessary that provision be made for frequent revisions of these estimates, as actual performance shows variations from the estimated performance.
2. Budgetary control cannot take the place of administration and management. It is not its purpose to deprive executives of the necessary freedom of action which is essential to progressive management. Its purpose is to provide the information on which administrative decisions and administrative control are based.
3. Budgetary control cannot be perfected immediately. The procedure called for by the budgetary program is usually new to executives, and it takes time to train them properly to make and use estimates of future plans. Too much should not be expected at the beginning from the installation of budgetary control.

tions in the form of income and outgo. Funds are the medium through which all business operations take effect. Budgeting directs attention to the necessity of properly timing and apportioning expenditures of funds and to the necessity of adequately estimating income, so that sufficient funds will be always available. A budget, therefore, acts as a balance-wheel for a business in all its operations and through all the changing conditions it encounters.

Necessary data for budgeting.—The data necessary for the purpose of budgeting embrace the following:

First, accounting data obtained by an adequate cost accounting system.

Second, additional data relative to the internal affairs of a business not readily obtainable from accounting, such as stock records, classification of materials and products, classification of markets, growth of business, etc.

Third, statistical information including data on:

1. General business conditions.
2. Conditions within the industry.
3. Position of the concern in relation to the industry and to general business conditions.

It is generally the lack of data on the internal affairs and external relations of a concern which prohibits any attempt at budgetary control. Not only the success of budgeting, but even the very installation of a budgetary system, presupposes the continual gathering and using of statistical information such as that referred to above.

Problem of budgetary control.—The first factor in the problem of budgeting is the development of an adequate cost accounting system, if such a system is not already in existence. Howard Coonley, President of Walworth Mfg. Company, states:

> Realizing the vital necessity of a more definite system of accounts to make possible an accurate method of control, we determined as a first step to divide our product into major classes and to use this classification in all our accounting. As a second step we decided to reconstruct our sales and production records over as long a period as was practical, and to use this information as a basis for budgetary system. . . . For purposes of both accounting and production control,

we had decided to divide our product into 15 groups and to break these groups down into 38 classes. From the time materials are put into production to the time they are billed to our customers, these classifications are maintained. By use of these classifications through the summary accounting records, we can follow the movement of goods, through raw material and work in process until they have passed out of our control into the market. The simplicity of such a cost accounting system is one of the great aids to interpretation of the productive processes going on within the company.

Speaking of the reorganization of the business along executive and departmental lines, he adds:

Under each of these managers at Kewanee and Boston is a complete but distinct organization, and the accounting system is arranged to correspond with the authority of these officers. Each works has its own accounting records based upon the division into 15 groups and 38 classes, so that we may check costs and efficiencies between the works on a comparable basis. . . .

This plan of organization and the development of an adequate cost accounting system had but one ultimate end in view. The company, which is developing rapidly, must for control purposes be just as easy to comprehend as the original smaller organization. Responsibilities must be so clearly marked that there could be no sidestepping the results as indicated by the accounting records. And thus was laid the foundation for a budgetary control which should make possible a ready indication of the present status of the business and its future trend.

Valuable viewpoints on the services rendered by cost accounting and its relation to budgeting have been expressed by M. C. Rorty and T. H. Sanders in the *Harvard Business Review* for January, 1923.[4] Mr. Sanders says:

The larger question of the utility of cost accounting to the business man arises here. The familiar arguments that cost information is a necessary basis for determining selling prices, that it promotes efficiency, reduces waste, indicates preferable methods of manufacture, and serves as a medium for the financial control of the factory, all have more or less weight, varying in different cases. But all of them together are less important than certain indefinable but very real advantages resulting from a cost system which concerns itself with those matters that

[4] M. C. Rorty, "The Statistical Control of Business Activities," pp. 154-166. T. H. Sanders, "Present Status of Uniform Cost Accounting," pp. 116-174.

really are of interest to the management, and leaves nonessentials alone. The difference between a management which is well informed, and one which is uninformed, can no more be covered by specific points than the benefits of a good education can be covered by giving isolated examples of its practical use. The steady flow of reliable data through the minds of executives, on matters which are their principal concern, cannot fail to generate an understanding, an enlightened comprehension, which will work itself out in sound policies which otherwise would be much less likely to materialize.

Elements in adequate accounting data for budgeting.—An adequate cost accounting system for purposes of budgeting should yield sufficient data to form a basis for budgetary estimates. Elaborate accounting systems may be desirable, although, at times, after being installed, they have been discarded as failures, because they have been too elaborate, have failed to fit the particular business, or have failed to answer the questions in which business executives are interested; but from the standpoint of budgeting, a cost accounting system may be deemed adequate in most cases if it yields data on the following points:

1. Separation of prime and supplementary, or overhead, costs. The aim of separating the various items of cost is to discover the relations that exist between output and the various costs. As pointed out in the previous chapter, the various costs bear a proportional, progressive, or degressive, relation to the volume of business. In budgeting, it is important to know the behavior of costs in relation to the estimated volume of business.
2. Classification of material purchases and their comparative costs. This is quite important, in order to plan a proper purchasing policy. Purchases, under budgetary control, may be spread evenly over a certain period or concentrated according to the price trend. This is true for manufacturing and mercantile establishments alike.
3. Separation of sales accounts, that is, a separate account for each class of sales. This plan will lend aid in estimating income as well as sales.
4. Labor costs, generally the second in size to material purchases, must be separated according to operations. Espe-

cially is this desirable in case of a manufacturing or mining establishment.

It is impossible to undertake a complete description of an adequate accounting system for purposes of budgetary control. No standardized system can be devised to meet the particular conditions prevailing in each business enterprise. Therefore, the above general principles have been laid down as guides.

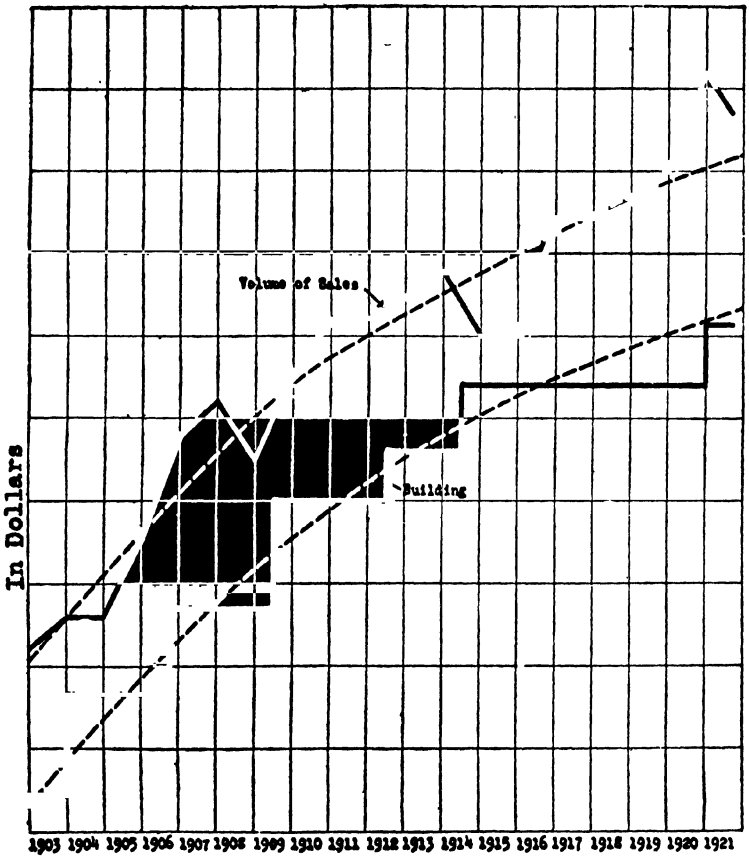
Requirements of internal statistics of business.—The second factor in the problem of budgeting is securing statistical information pertaining directly to the business itself. This includes: (1) statistics indicating the normal growth of the business; (2) data evidencing the nature of the concern's own business cycle; and (3) statistical measures of the seasonal changes peculiar to the business.

Calculating normal growth.—In determining the normal growth of a firm's volume of business, a definite basis for an expansion budget can be ascertained. It was pointed out in the previous chapter that fixed expansion may affect the working capital position—which it invariably does—and also may influence current operations, not to mention the often delayed effect of overhead costs on the financial progress of the concern. The twofold question to which an expansion budget seeks an answer is, When and how much to expand? The answers must be found through a statistical survey of the concern's normal growth, its present and potential capacity, and the costs involved in additional units of plant. The normal growth in the volume of business must be found, irrespective of short-time fluctuations, such as occur in the business cycle, or seasonal variations. No better illustration for clarifying the principles involved in determining the time and the degree of fixed expansion can be given than that worked out by Mr. Henry S. Dennison. Speaking of fixed investments, he says:

> As the business cycle advances the heads of a corporation should scrutinize more and more carefully each project put before them by the engineering staff. They will find that even if the projects are completed as to planning, many of them can be postponed as to execution with profit to the company and to the community as well. In the boom before 1873, Andrew Carnegie, when asked by Mr. Farquhar why he did not build more furnaces, said that it would be cheaper to wait and buy plants that other men were building. He did not exactly

foresee the panic that was to come, but he knew that the steel industry was being expanded at a more rapid pace than the market could assimilate, and it was therefore evident to him that a number of firms were doomed to failure.

It takes time to draw up building plans and discuss them, and after construction is started it takes a long time to finish the buildings and fill them with machinery. Hence the business man cannot afford to wait until his present facilities are overtaxed before he begins to consider expansion. Those who do wait are likely to find their added capacity becoming available at just the time when they ought to be curtailing their output, or after they have already done so. They build fixed assets when they cost the most and finish them when they are needed least.



Building Program Related to Course of Sales.

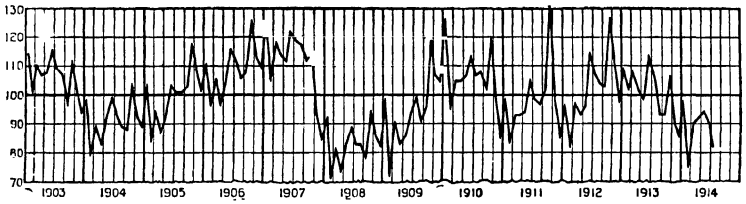
The only way to avoid this is to study the long-range trend of your business; find out the rate of normal growth, and build for it. In our company we have charted our line of growth for different facilities over a period of twenty years or more, and on this basis we estimate our future requirements during the cycle as a whole. When building and machinery prices are below the secular trend, we build a little more than up to the normal line, and when they are above, we build less or stop building entirely. We do not try to build at the exact bottom of the market any more than we try to purchase raw materials at that time. It would be even harder to hit the exact bottom in building than it is in the case of merchandise or raw materials.

Of course if we have not the money during depression we cannot build; but the desire to have the money on hand is a strong restraint during booms, and good planning will usually make it possible.

Explanation of chart.—In the above chart, several points are to be noted. The volume of sales is expressed in dollars, as is also the building line which represents the dollars of fixed investment in terms of land, building, and machinery, or those physical assets directly engaged in the output of goods. The dotted line, approximating the direction of normal growth of sales as well as of building, may be fitted to the actual data by various methods. Such scientific methods of fitting a straight line to the actual data as that of least squares, or moments, as referred to in Chapter xi, may not be altogether necessary for practical purposes, nor for fitting a curved line to the data. It will often suffice if, after the sales are plotted, a line is mechanically drawn through the sales data so that, roughly, over a long period, the areas below are equal to the areas above the adjusted line. Of course, greater accuracy is obtained if a more scientific method is used.[5] Increased accuracy might also be obtained if the volume of business could be expressed in terms of physical units, such as tons, pounds, yards, etc., and building be expressed in units of capacity. In helping to formulate budgetary plans, or in analyzing them, the credit man must be guided by the funds and services he has at disposal in choosing between rough-and-ready schemes and scientific methods.

[5] *Cf.* Warren Persons, "Non-technical Explanation of an Index of General Business Conditions," *Harvard Review of Economic Statistics.*

Discovery of firm's own cycle in sales.—The next step is to discover the firm's own business cycle as a basis for forming budgetary estimates. This is tantamount to forecasting. If the sales of the firm are plotted over an extended period, evidences of a cycle will be observed.[6] Furthermore, if considerable accuracy is aimed at, the yearly increment of the normal growth of the sales may be found and deducted from the total sales each year, leaving the cyclical trend, with the seasonal influences still present, however, in the remaining figures. As a matter of fact, if statistical methods are to be employed in finding the normal trend scientifically, then the cyclical trend plus the seasonal will naturally result from the same calculations.[7] In order to illustrate the various trends in a company's sales, a chart is reproduced from the Harvard Economic Service:



Sales of Company M, Corrected for Trend (Per cent Ratios of Actual Data to Ordinates of Trend).

Finding of cyclical trends in other items.—After the nature of the cyclical trend in sales is found, there remains the discovery of similar fluctuations in other factors. The cyclical variations in sales yield an excellent basis for estimating future sales over at least a yearly period. Subsequently, provisions must be made to purchase and produce for these estimated sales. In this connection, the timing of purchases and production as well as the costs involved must be considered. Since materials and labor constitute the major portion of the expense, it is extremely desirable to obtain data regarding the influence of the business cycle on these factors. So the next step is to plot, over a period of years and on a monthly basis,

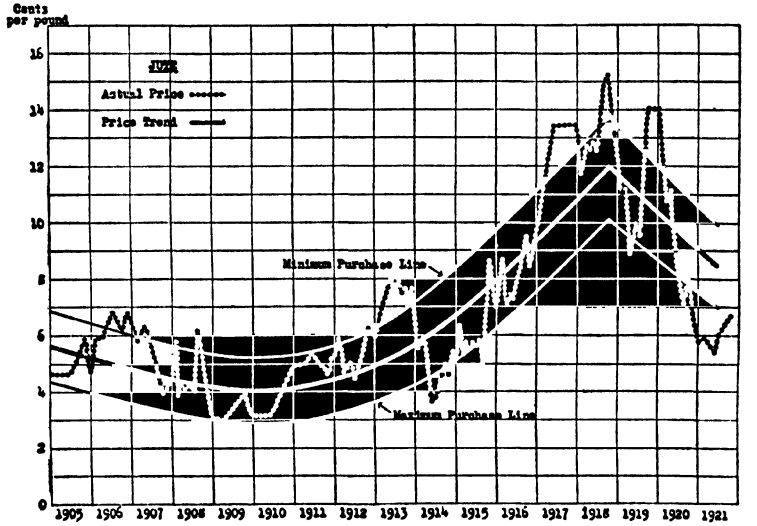
[6] *Cf. supra*, p. 313. Harvard Economic Service's calculations of trends in sales of company are pertinent in this connection.

[7] *Cf. supra*, p. 306 et seq. Dr. L. W. Hall's statement.

the price of materials purchased. Again, the significance and value of this price data are lucidly presented by Mr. Dennison:

The purchasing agent must be interested in cycles for two reasons: first, in order to gauge the purchasing requirements, and second, in order to gauge prices. For his purchase requirements he will have to depend largely on the planning department, but within certain limits he will vary his actual purchases according to existing prices.

Before the war we started to try out an interesting experiment in our purchasing department. Unfortunately, the unusual conditions of



Use of the Price Trend as a Guide to Purchasing.

the war-time period interfered somewhat with the development and extension of our plan, but now we are getting it under way again. Briefly, our idea is this: We have figured out roughly the maximum and minimum inventories of each important raw material which we are willing to carry at different periods of the cycle. Then we have charted over a long period the prices of the principal commodities that we purchase, and through this we have drawn a line showing the secular trend. (See Chart—above.) Approximately parallel to, and a certain distance above and below, this line of secular trend, we have drawn what we call our minimum and maximum purchase lines. Then we vary our actual purchases according to the position of actual prices relative to these three lines. The minimum purchase line represents the smallest amount we dare carry for current needs, and the maximum

purchase line represents the most that we consider it wise to invest in inventories. Suppose, for instance, that on a certain material our standard quantity to order is six weeks' supply. If prices are below the line of secular trend we may buy up to twelve weeks' supply, but if prices are above the line of secular trend we may buy not more than two weeks' supply. We make no attempt to gauge the actual turning point, because we believe that it is impossible to hit it exactly. Most purchasing agents who wait for the actual turning point buy too late or too much.

I do not mean to imply that our purchasing is a purely automatic affair, but merely that we have found it wise to use certain mechanical guides. The one great temptation always before a purchasing agent is to buy far beyond estimated needs on a rising market. Each day the problem of how much to buy comes up on some individual commodity, and at the time there seems to be every reason for buying up for a long time ahead. Hence, unless some guiding rules are followed, the cumulative result is likely to be such that in emergencies the management will find that it has too much money tied up in inventories.

I doubt if the American business structure has yet gone far enough in divorcing manufacturing and merchandising from speculation. It is quite as dangerous to speculate in goods as to speculate in stocks. Merchandise cannot be sold as quickly as stocks, for the facilities of the stock exchanges are lacking.

The earnings of thousands of employees and the savings of many stockholders depend upon the continuous operation of manufacturing industries. It is doubtful policy for the manufacturer to jeopardize the interests of so many persons for purposes of speculation. If a number of persons wish to take big risks they organize a speculating corporation, the stockholders of which are willing to take this risk on the chance of getting higher returns. The directors of a concern already burdened with all the problems of production and distribution have not the time to give sufficient study to the course of raw material prices. That is the business of the broker who devotes his entire time to the study of the market. The manufacturing industries should look for their recompense to the somewhat steadier profits that result from the skill with which the functions of manufacturing and merchandising are performed. This particular process of closer functionalization can be carried out more widely with good results.

A similar method is adaptable to the price of labor or wages. Wages rise and fall with prices and volume of business, although, as a rule, belatedly. Sales estimates may be analyzed upon such data with respect to purchases, and labor, with reference to the two major costs, and with a clearer

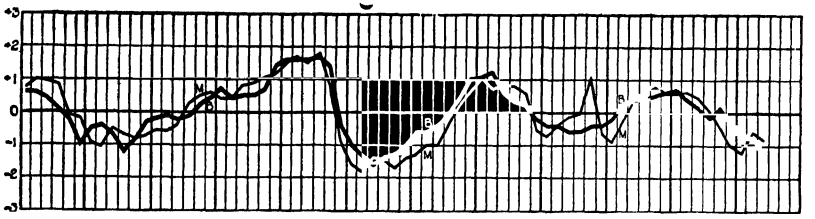
knowledge of the relation of the cyclical trends of all these factors.

Cyclical fluctuations in income.—The final factor whose cyclical fluctuations must be determined is that of income from sales or collections. Here it is necessary to discover the behavior of the proportion of time-sales to cash-sales and the trend of collections during a cycle. Such a picture might be obtained by first plotting the actual collections over an extended period on a monthly basis, and then plotting the ratio of time to cash sales on a similar basis. The entire subsequent chapter will be devoted to the discussion of this problem.

Determining the seasonal element.—Returning again to the seasonal variations in the above factors, primary importance must be given to the seasonal nature of the sales. A firm should know the average percentage of variation in its business from month to month, from quarter to quarter, or from season to season. This problem may be considered again, in combination with the various scientific methods in use for finding the secular and cyclical variations. If desirable, reference can be made to those statistical methods adapted to this purpose as those previously referred to.

Selection of indexes of business conditions.—The third factor in the problem of securing a statistical basis for budgeting is the selection of an index of the trend of general business conditions and of the industry to which the firm belongs. The index of general business conditions affords a basis for judging what is the phase of the business cycle in which current business finds itself, and for estimating the time of the succeeding phase or the direction of the trend of business conditions. For such an index the Harvard Economic Service offers an excellent series in its *B*, or Business Curve, as well as in its *A*, or Speculative Curve. The efficacy of this method is clearly shown by the chart reproduced from the Harvard Economic Service which is shown on page 378.

Besides an index of general conditions, it is necessary to obtain data on the conditions within the industry to which the firm belongs. Such data might cover production, stocks, prices, and indicators of demand for the product. An admirable presentation of figures on the conditions in the various industries may be found in the Standard Daily Trade Service *Statistical Bulletin*, *Federal Reserve Bulletin*, *Harvard Re-*



Sales of Company M, Cycles (Per cent Deviations from Trend, Corrected for Seasonal Variation, and Expressed in Units of One Standard Deviation), Compared with the Harvard B Curve.

view of Economic Statistics, Commercial and Financial Chronicle, and the various Trade publications.

Summary of steps in obtaining statistical basis for budgets.—Before proceeding further it might be well to summarize briefly the steps involved in obtaining an adequate statistical basis for budgeting:

1. Development of cost accounting which leads to:
   a. Segregation of cost data.
   b. Classification of materials used.
   c. Separation of income.
   d. Differentiation of statement items.
2. Development of internal business statistics includes:
   a. Measure of normal growth in volume of business.
   b. Cyclical variations in:
      (1) Sales.
      (2) Purchases and price of materials.
      (3) Labor requirements and wages.
      (4) Collections.
   c. Seasonal fluctuations in sales and collections.
3. Development of external statistics:
   a. Index of general business conditions.
   b. Indices within the industry.
      (1) Production.
      (2) Stocks.
      (3) Shipments.
      (4) Demand indicators.
      (5) Prices.

Determining range of forecast.—The fourth step in budgeting is to determine the range of forecast or estimates. This range should be longer, naturally, for purposes of fixed expansion, than in the case of current operations. Fixed investment operations, outside the smaller items of expense that may occur now and then, should be planned at least five years in advance. No general period, however, can be recommended, since individual concerns differ in the matter of normal growth. A rapidly growing firm must build more, and oftener, while a concern experiencing a more moderate growth, or one having passed into a state of relative stability, has fewer requirements for expansion. Again, as has been pointed out before, the status of the business cycle, with special reference to the cost of expansion in these various stages through which business activity passes, must be considered in any expansion program, which further prohibits any attempt to suggest a definite period in which fixed investments should be projected.

In regard to current operations, namely, purchasing, production, selling, and collection, a yearly period is in most cases advisable. This yearly period must take into account three specific elements that influence the total estimates. These are the yearly increment of normal growth, the positive or negative increment as the result of the business cycle, and the seasonal changes. The reason for suggesting a year as the forecasting range is primarily because this range will naturally embrace all seasonal variations. Concerns with a rapid turnover of inventory, and chiefly cash sales, can perhaps shorten this range. This is an open question for those firms which have really no inventory problem; for example, a bakery, a laundry, or a dairy concern. Of course, this problem of range for estimates cannot be completely divorced from the question of speculating in inventories and the legitimacy of this speculation as compared with whatever might be considered a sound policy with reference to forward buying, or to advance production with the aim of keeping the plant employed more equally over a year. Again, the problem is complicated by the opportunity for hedging operations such as are possible in commodities for which organized produce exchanges exist, with the possibility of contract purchases and also of contract sales.

Summary of approach to budgeting problem.—The final results to be achieved by the discovery of these factors in the approach to actual budgeting are these:

1. To secure an accounting and statistical basis upon which budgetary estimates can be made.
2. To insure a proper basis for estimating the yearly volume of business.
3. To ascertain the capacity required for handling this estimated volume of business which will throw light on the fixed expansion requirements.
4. Properly to adjust production to an even distribution of the load throughout the year.
5. To obtain an adequate basis for judging purchasing requirements and prices of materials, etc.
6. To form a proper inventory policy as well as a program for selling and collection.
7. To control expenditures in the light of more accurate knowledge of income.
8. To develop a scientific basis for timing all undertakings and operations as well as for determining the amount to be undertaken.

The expansion budget.—The basis for estimating the need for expanding fixed assets, as has been pointed out before, must lie in the line of normal growth in volume of business and the different facilities required as related thereto. This long-range trend must be divorced from the cyclical fluctuations. If possible, as previously emphasized, it should be measured in terms of the physical volume of business, rather than in terms of dollar sales. Such a measure would be better adapted to the purpose of relating the yearly increments of normal growth to the units of capacity in which plan additions are reckoned. The normal growth should be expressed in yearly increments of physical volume. This yearly increment is best found by such statistical methods as explained. Firms which are undergoing expansion or estimating requirements therefor may or may not find that the point from which future requirements must be calculated is an already saturated capacity. Here, again, the position of the business cycle must be clearly understood and the fluctuating volume of business conditioned by it, so that short-time influences will not en-

cumber the line of vision for long-range expansion and the data upon which such calculations must rest.

Timeliness of expansion.—This leads us to a discussion of the question of timeliness of expansion. The amount or extent is primarily determined by the line of growth, although the line of growth also indicates when expansion is necessary. But it is not always necessary to expand. If capacity is completely utilized, orders may be refused, the price may be raised, or a discriminatory policy may be inaugurated for the purpose of weeding out poor-paying customers. Moreover, these latter measures may not be desirable if they tend to undermine the goodwill of the company. All of these considerations bear upon the question whether it is advisable to expand, during a particular phase of the business cycle. The timeliness of expansion is really a test of costs and capitalization, and, in the light of the business cycle, these factors should determine, to a large extent, when an expansion policy should be undertaken. It might be wise for a firm to continue for a time with a saturated capacity, or to expand before such a saturation point is reached, provided low costs and the normal growth line warrant the undertaking at the time.

The problem of timeliness abstractly presented.—For the sake of illustration, let us assume that a concern has experienced a long-time increase in its volume of business and that the increment of normal growth has assumed such proportions as to warrant further fixed investment. In order to clarify the problem, let us assume also that the question of expansion presents itself in a well advanced period of prosperity, when costs are increasing. In this case, the question would resolve itself into the problem of whether it is wise to expand at the time, or to postpone expansion for the time being. The long-run net gains or net profits might be considered in this wise:

First: If expansion is to be undertaken at the time, the factors to be estimated are these:

A. Costs.

1. High cost of plan during the later phases of prosperity.
2. The increased overhead costs and their burden during the ensuing period of liquidation and depression.

B. Gains.

1. Profits obtained, because of the greater volume of business possible between the time of the completion of the plant and the time when prices and demand recede after the prosperity peak has been passed.

C. Probable extra costs.

1. The temptation to overproduce and overstock with inventory on account of the newly increased capacity and the resulting losses therefrom after the peak has been passed.

Second: If expansion is to be postponed until the ensuing depression has lowered costs, the factors to be estimated are these:

A. Costs.

1. Profits not earned because of the limited capacity between the time of having attained a saturated capacity and the time of culminating rise of prices and demand.

B. Gains.

1. Low costs of the plant that may be built during the depression and early phases of revival.
2. Less overhead cost burden during the ensuing liquidation and depression.

C. Probable extra gains.

1. Avoidance in overstocking of inventory and the losses attendant thereon in periods of liquidation and depression.

Whatever the difference appears to be in the estimated net gains or net losses, after comparing the two alternatives, it should guide the concern in determining the more profitable time to expand.

Necessity of a continuous fixed expansion budget.—The expansion budget of a growing business should be a continuously functioning budget, not entirely for the reason that every concern has fairly regular expenditures to meet, which partake of the nature of fixed investments, such as minor constructions, occasional additions of trucks, etc., but for the reason that expansion in a growing firm is necessarily a continuous problem. A continuously functioning expansion budget is really a budget that is passively or actively operative. By passively operative we mean the work of estimating requirements and costs, etc., and of laying up funds, nearly always out of earnings, or of premeditated security issues, etc., which should be constantly engaged in. By "actively operative" we mean the actual undertaking of expansion, when the expenditures commence, and the continuance of this activity until the expansion has been consummated.

Construction of expansion budget.—The actual work of constructing an expansion budget, after estimates and other ways and means have been considered, as pointed out above, consists of determining the costs and the availability of funds to meet them. The total cost of the expansion may be determined from the engineer's or contractor's report. To what extent this estimate is definite will depend on the nature of the arrangements for letting the work. That is, the plant may, or may not, be built and equipped on the basis of contract prices. In most cases, all costs cannot be contracted for, some must be estimated, which means that they are subject to change. The next step is to distribute the costs over the construction period. If contracts cover the major portion of the work, the method of payment is arranged therein, meaning the time and the amounts to be paid. To the extent that no contracts exist and that expenditures are to be made in a different manner, to that extent there is less determinateness, and estimates must be relied upon, except for the terms of purchase of materials, supplies, etc.

The next step in arranging the expansion budget is to initiate ways and means of meeting the costs. These may be briefly outlined as follows:

1. Reinvestment of earnings.
2. Use of existing working capital, provided it is sufficient

and does not impair the current operations and the future additional requirements, after the new expansion is brought into operation.

3. Owners' or stockholders' investments.
4. Bonds or mortgages.
5. Short-term notes.
6. Combination of two or more of the above sources, which depends on the nature of the present financial structure of the business and the state of the credit and investment markets. Due regard must also be paid to the special financial requirements of a rapidly growing business as compared with a more or less stable one.

Connection between fixed expansion and current operations.—The final consideration in budget making has to do with the infringement of the expansion budget on current operations, which brings to light the connecting link between this and other budgets, in the general scheme of budgetary control. Such infringement occurs where there is a diverting of labor to expansion work, where general administrative attention and expense are required, or where use is made of existing plant and equipment and also of current working capital. An adequate system of cost accounting will keep track of such overlapping operations; and they should be clearly discerned and provided for in the respective budgets, in order to eliminate as much as possible the interference of expansion work in current operations. The aim should be to avoid confusion in the construction and application of the separate budgets, so as not to vitiate the basis of control.

The operating budget.—The point of departure in the construction of the operating budget is the estimated volume of business for the ensuing year. Perhaps, in firms which possess no inventory problem from the standpoint of carrying stocks, or of manufacturing for future sale, the period for such estimates might well be less than a year. In the expansion budget, the seasonal and cyclical influences are ignored, but in the operating budget these variations are of primary importance, since they produce the greatest changes in the volume of business. Knowing the size of the seasonal variations as well as the trend of the cycle, with its increasing or decreasing effects on sales, we can estimate the volume of

business. Of course such estimates must show deference for the normal growth increment as well. Considerable help in establishing a basis for estimating the yearly volume of business can be gained by comparing the year in question with similar years—the cycle stage being also similar—that have been experienced in the history of the enterprise.[8] Charts of past sales are convenient in this connection. Once the estimated sales have been derived, then the problem becomes one of adjusting all other operations to it; this involves both the timing of purchases and production, and the calculating of the extent or amounts involved.

Two distinct problems in adjusting purchases and production to estimated sales.—There are two distinct problems, however, in adjusting purchases and manufacture to the estimated volume of business. In the first instance, an inventory policy must be decided on. If the business cycle trend is downward, meaning that prices and demand are falling off, then the inventory policy should be one of "hand-to-mouth." No stocking up of inventories is sound under such circumstances. With respect to the manufacturing policy a different approach is necessary. For, even though prices are falling and the estimated volume of business may be larger or smaller than the previous year, it might still be profitable to produce in advance of orders and thus keep the plant continuously employed. This might be quite essential in case a firm's seasonal fluctuations are wide, or if only one or two seasons exist in which the product can be marketed. From the standpoint of cost of production—unless purchase prices are falling severely—distributing output more or less evenly throughout the year might mean lower costs, in view of the smaller requirements of plant and equipment, less change in labor personnel, etc. In the second instance, an inventory as well as a manufacturing policy must be decided upon in case of rising prices. Naturally, if the price trend of purchases, as well as of other factors in production, is upward, then forward buying means larger profits in the future. The manufacturing policy, in such periods, must be determined on the basis both of the trend of costs and of the advantages of distributing production evenly

[8] J. H. Barber, "How the Walworth Company Looks Ahead," *Administration*, May, 1923.

over the year. This problem is very closely linked with the policy of expansion, and indicates the necessity of considering plans for expansion in the light of normal growth of the concern, as compared with temporary fluctuations in orders resulting from the business cycle. In periods of transition, when the business cycle is about to bend in an upward or downward direction, the estimated sales might be very difficult to derive, and, in such periods, both the inventory and manufacturing policy should be similar to that described for a declining price period. It can thus be seen that the first step, after the sales have been estimated, is to decide on an inventory and manufacturing policy, which shall have regard for the trend of prices of all purchases and cost factors and for the production capacity of the firm.

Difficulty of coördination in periods of rising prices.— The chief difficulty in adopting a sound and profitable inventory and manufacturing policy occurs in the period of rising prices. To what extent should a concern speculate in inventory? When should it cease to stock up inventory and work off the stocks in a sellers' market? If budgeting proceeds on a yearly basis, one restriction on current overexpansion is already present, especially if the concern practices the policy of clearing its shelves of inventory once a year. This is quite a sound policy, since recent researches have led to the belief that the average business cycle is of 42 months' duration.[9] Therefore, prosperity periods in recent years, with proper qualifications to be made for the War years, have not varied much from twelve to eighteen months' duration. Furthermore, the discovery of a firm's own cycle will throw considerable light on this aspect of the problem. Such indicators of the trend of general business conditions, and of previously described conditions within the industry to which the firm belongs, and which are necessary in furnishing the forecasting basis for budgetary estimates, should offer much aid in foreseeing the approaching peak of prosperity. This information, in conjunction with the statistical knowledge of the firm's internal conditions, should afford a basis for calculating the time when forward purchasing, manufacturing, and stocking up of inventory should cease, and working off of stocks should

[9] *Harvard Review of Economic Statistics.*

begin. The information referred to is the rate of inventory turnover and the stocks on hand plus the advanced orders outstanding. For example, let us assume that a concern has stocked up inventory and that the peaks of prosperity might be reached within twelve months. The firm wants to play safe and not be caught with stocks on hand when the tide turns. If it has a turnover of, let us say, four times a year, or once every three months, and it finds that, after having stocked up the first six months of the period above referred to, it has, in stocks on hand and outstanding advance orders, a supply of goods equal to what it sold at this turnover rate in the first six months, then a cessation of further stocking up should take place and the stocks should be worked off. Knowing the rate of turnover six months before the expected peak, the actual stocks on hand, and those to be received on advance orders, one can easily calculate the time at which all the stocks could be sold. If the turnover should increase, which would be likely in periods of intense boom, and the firm sells out before the turning point arrives, a hand-to-mouth policy should be assumed. The practical application of this policy might be hampered by the inability to purchase, except on advance orders; but, on the other hand, expansion has occurred in many lines of industries, and this new equipment may be turning out goods to such an extent that the transition from the sellers' to the buyers' market is already in effect. The policies described here might be applicable also for those firms whose business is quite seasonal and whose product is both perishable and seasonal.

Estimating disbursements.—The estimate of the volume of sales for the year, which automatically provides for the influence of the trend of the business cycle as well as for seasonal variations, leads to the formulation of an inventory and production policy. This is essential before the next step, estimating disbursements, is taken in the operating budget procedure. Here, also, the chief factors in the problem are the amounts and time of such expenditures. The answer for these, as we have seen, is rooted in the volume of business expected and the preparations made for it during the year—meaning the inventory policy to be followed, which is conditioned by the price trend, but modified by the plans to carry on production more or less evenly throughout the year.

The problem of estimating disbursement begins after the total volume of business has been determined for the year, and after the plans for current operations have been decided upon, with a separation of the disbursements into classes. This classification should be made on the basis of the behavior of each cost in relation to the trend of the volume of business. Correlation between each of these classes and the past volume of business will make clear what costs vary proportionally, progressively, or degressively with the change in volume of business. This relationship will also demonstrate the behavior of the various costs in the different phases of the business cycle. In this connection, it must be pointed out that the volume of business may not be the same as the volume of sales. For it can readily be seen that a mercantile house or a manufacturing concern may purchase and fabricate materials in advance of sales, and that, later, when its volume of sales is very large because of selling off stocks, the purchases and fabrications may be considerably contracted. So, in order clearly to understand the behavior of costs, the relationship of the trend of the separate items of disbursements as compared with the following items should be discovered:

1. The volume of purchases.
2. The volume of output and inventories on hand.
3. The volume of sales.

Advantages in classifying costs.—When the problem presents great complexity in details, the aim is to avoid confusion in budgeting. Too many details clutter the budgetary machinery. With respect to the problem of classifying costs, the cost of materials, supplies, and wages consumes the major portion of outgo, and the discovery of the relation between these two prime costs and the volume of purchases, output, and sales is relatively easy. The overhead or constant costs, also, are subject to analysis, in their often degressive tendency relative to these volumes. The miscellaneous costs, other than those that may fall in either of the above categories, must be handled with the same principles in mind.

The price trend.—Another complicating element, especially in relation to materials and supplies, is the price trend, which is exceedingly important, in that it may induce or restrict

purchases. This also applies to output and the carrying of stocks, as a result of the trend of price of materials and supplies, or of selling prices. If a close coördination exists between production and sales—meaning that no advanced undertakings are engaged in—then the determination of disbursements would be greatly simplified in budgeting. But to the extent that advance purchase, etc., advance production, and holding goods from the market are engaged in, to that extent are the various estimates of disbursements influenced. Such policies, of course, are naturally within the control of the executives, except when a firm deals in perishable products, or in products that are created for immediate use, such as services; or whether it buys or sells on contract.

Summary of steps in estimating disbursements.—

1. Breaking up costs into distinct classes, according to their behavior in relation to the volume of purchases, output, stocks, and sales.
2. Distinguishing the variations manifested by these costs —whether they vary proportionally, progressively, or degressively in relation to the volume of purchases, output, stocks, and sales.
3. Determining the firm's policies in relation to price changes, and to equalizing production, which will afford a basis for judging the time of the expenditures.
4. The segregation of constant or overhead costs into a distinct category which represents regularly recurring expenditures.

Estimating income.—When the disbursements have been estimated, both as to time and amount, the next step is to estimate the income. The income from sales should be separated from that from other sources for, though the latter must be taken account of in budgeting, especially if it assumes noticeable proportions, chief attention should center on sales income. The analysis of sales income, in the first instance, should be directed toward estimating that part which represents original current operating outlay and that part which represents profits. So that the question of income may be presented as follows:

Income { 1. Sales Income { 1. The Original Current Operating Outlay. 2. Profits.
2. Other Income

Sales the basis of expectancy.—Since income is primarily derived from sales, the latter must be taken as the basis from which all income estimates are made. But it must be combined with certain other factors which determine the amount or income at certain times. The time when income is received is as important as the total amount to be collected from sales. Therefore, the steps in estimating income from sales are:

1. Estimates must be made of the total volume of sales for the year, and these estimates must be distributed over the year according to the cyclical and seasonal influences. Charts should be constructed in this connection.
2. The terms of sale being known, estimates of cash income should be made according to the estimated trend of sales. This cash income might be estimated on the basis of the past proportion between cash and time sales.
3. Estimates of the collection of receivables, or cash income from the time sales, should be made by correlating collections with sales or time sales, if the latter are available.
4. Formulation of an efficient collection policy which is operative at all times with the aim of equalizing the collections.

Correlations should be made over long periods.—It must be emphasized that the data in the above proposed correlations should cover a period of years, on a monthly basis, in order to apprehend the proportions of cash to time sales in relation to total sales, and the time lag in collections in relation to total sales, which is equivalent to the net terms of sales or time of credit granted. The estimate of profits, as distinguished from original outlay, is important, in order to determine the addition from that source to working capital, for future operations, and, therefore, it renders assistance in estimating the financial requirements which must be met by borrowing.

Coördinating income and outgo.—When disbursements and income have been estimated, and set up in the budget, the

task of coördinating income and outgo leads directly to the problem of determining the financial requirements for any given period. Coördination of estimated income with estimated disbursements means juxtaposition of the various separate elements in each, in order to determine their relation to each other. The degree of determinateness of the elements in outgo and income furnishes an excellent basis, that is, elements classified as constants may be offset against those classified as variables. It is well to recognize, in this connection, that outgo, as a rule, precedes income; that there are streams of outgo and streams of income; and that these streams vary in volume and velocity during the course of a year. To clarify the problem of coördinating estimated outgo with estimated income the following may be helpful:

Estimated sales Cash income Collections Lag income	leads to	Estimated price trends Production plans Purchases Production Output and inventory Policies	leads to	Disbursements Materials Supplies Wages Overhead or constant costs Other costs

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Constantly recurring disbursements, or overhead costs Interest on funded debt or in borrowed funds for permanent working capital by means of renewals of short term loans Depreciation Maintenance Taxes Insurance Salaries Rents, etc.	offset by	Income from cash sales or collections coming within the category of constant minimum income

Variable disbursements, or prime costs Purchases of materials and supplies Wages Interest on variable bank loans Selling expenses apart from above Salaries (advertising, commissions, etc.) Freight.	offset by	Variable income from sales, both cash and time, conditioned by the price trend, production, output, and inventory policy of the firm, which influence the opposite disbursements.
Excess of disbursements	offset by	Borrowing or discounting receivables, supplemented by: intensifying selling effort; cutting down costs, such as wages; the installation of efficiency methods; intensifying collection effort; purchasing on trade credit; or contracting operations, etc.

The matter of estimating income or collections will be discussed at length in the next chapter. The problem of coördinating income with outgo is such a difficult one, in view of varying policies of purchasing, production, and inventory, and, one might add, of collecting—all of which are influenced by the current and prospective trend of prices and business conditions, as well as by whatever plans exist for purposes of stabilizing production—that it, too, will be treated separately later on.

Control aspects of budgets.—Budgeting, as we have seen, proceeds from cost accounting, and from internal and external statistical data, to forecasting and budgetary estimates and finally to the coördination of the estimates in such a way as to render the budget an effective instrument for business control. The objective toward which all budgetary principles are directed is control; but this control is not secured without an

efficient administration of the budget, and this aspect of business administration presupposes certain conditions. The first of these is the development of adequate and accurate data upon which estimates must be based. The second is a scientific procedure in budget construction. The third is the development of a spirit behind the budget—a spirit that embodies faith and belief in the budget as a sound instrument of control. The fourth is the frank recognition that the budget is not an end in itself, but a means to an end. A budget, therefore, should never be regarded as a rigid straightjacket in which all business plans must be inflexibly molded. Neither should the budget be regarded as a supplementary instrument to be referred to occasionally and changed at will. The fifth, the necessity of providing the budget with a system of checks which continuously adjusts estimates with actual performances, or *vice versa*, follows naturally. This means that if the budgetary estimates miss their objectives, in the test of actual performance, change should be made, in the light of developments over which the enterprise can have no control. As a corollary, budgetary changes should not be made, even if the test of actual performance does not yield estimated results, in so far as circumstances surrounding performance were within the firm's control.

Departmentalization of budgets.—This problem is closely allied with the next step in budgeting, namely, its departmentalization. Cost accounting, as we have seen, has already made possible more accurate departmental data. The data for budgetary estimates should be derived from the various departments affected. This data may also be the basis for the various departmental estimates, made by those who are responsible for the work in these departments. The collection of these departmental estimates and data, made possible by cost accounting, should be done by the executive staff, which should also coördinate it. After the budget has been constructed for the entire firm, each department may be notified of its final estimates, that is, it may be informed what will be expected of it during the budgetary period. Moreover, current data on performance or operations should be constantly collected and coördinated by the executive staff, in order to check the estimates with actual results obtained in the various departments and in the firm as a whole. Any differences may

then be adjusted by mutual understanding between the executives and departmental heads.

The departmentalization of the budget, then, is one of the initial steps in its construction, and is carried on even in the continuous checking of actual performance with estimate. By this procedure, the entire concern, its various departments and responsible heads, is mobilized as an organized whole, the base of its operations being the budget. Plans and purposes become clear, and are registered and incorporated in a general plan of control, while a system of checking and of responsibility for results renders the budget a telling instrument of control, as well as of solidifying the morale within an enterprise.

When budgetary estimates fail of realization, the reasons therefor should be definitely ascertained. Changes in policy, in personnel, in organization, etc., all may be potential factors in budgetary control, affecting the attainment of objectives, and often may be manipulated with enormous advantages to the concern.

An illustration of the operation of budgetary control as outlined by the Bureau of Commercial and Industrial Affairs, Boston Chamber of Commerce, is here reproduced:

A. Statement of the Problem

To illustrate concretely the operation of budgetary control a simple problem will be stated and a solution offered. The X Manufacturing Company produces one commodity which is made in ten sizes. Its factory is organized into three departments. It has ten sales branches through which it markets its products. The organization of the company is as follows:

1. President. The president has a staff assistant who will assume direction of the budgetary program.
2. Production Manager.
3. Sales Manager.
4. Treasurer.
5. Executives in Charge of Service Departments.
   - (*a*) General Auditor.
   - (*b*) Purchasing Agent.
   - (*c*) Personnel Manager.
   - (*d*) Traffic Manager.
   - (*e*) Office Manager.

6. Manager of each branch.

Required: To outline the installation of a system of budgetary control effective as of January 1, 1922.

B. METHOD OF PROCEDURE

A possible method of procedure is indicated by the following outline:

1. Length of budget period. Considering that the merchandise turnover period of the business is short and that the budgetary program is just being instituted, and, therefore, errors are apt to be made, it is deemed best to make the budget period three months in length.

2. Organization for budgetary control. Under the direction of the President, who is the final authority on all matters pertaining to the budgetary program, the following organization has been set up:

(*a*) Advisory Committee. The Advisory Committee is composed of the President, the Sales Manager, the Production Manager and the Treasurer. The Assistant to the President is to serve as Secretary to this Committee. Under the authority and direction of the President, the Advisory Committee is to consider all departmental estimates and makes such revisions as he thinks desirable.

(*b*) The Staff Assistant to the President. Under the authority and direction of the President, the Staff Assistant to the President is to have general control and supervision over the preparation and execution of the budgetary program.

(c) The Departmental Heads. The executive heads of the various departments of the budgetary control organization are to be responsible for the preparation of the estimates of their respective departments.

3. The sales estimate.

(*a*) Each branch manager is requested to make an estimate of the sales of his branch during the first quarter of the year 1922 for each of the ten sizes of product manufactured.

(*b*) To assist the branch managers in making these estimates, statistics are obtained from the balance of stores records which show the sales of each item for the past five years. Although the balance of stores records will show the total sales of each size for the past five years, these records may not show the sales made by each branch. In some businesses, the orders received from each branch are given a separate number, and, by means of this number, the sales to each branch can be determined from the balance of

stores record. It may also be possible that the general accounting records show the sales of each size made by each branch. If this information is not available for the first quarter, means should be provided for making it available during subsequent quarters.

(*c*) The Staff Assistant to the President will send to the branches a form on which they will submit their estimates. This form will be ruled as follows:

SALES ESTIMATE

(Exhibit 1.)

ITEM	Estimated Out-of-Stock Sales		Estimated Stock End of Quarter		Estimated Stock Beginning of Quarter	Required from Factory for Stock		Estimated Direct Shipment Sales		Total Requirements from Factory	
	Original	Revised	Original	Revised		Original	Revised	Original	Revised	Original	Revised

In the preparation of this form it is assumed:

(1) That the branches maintain an inventory from which they make some shipments, while other shipments are made direct from the factory to the customer.

(2) That the estimate is to be made before January 1. It is therefore necessary that the inventory on both January 1 and March 31 be estimated.

(*d*) The branches will submit their estimates to the Sales Manager. He will make such revisions as he thinks necessary and submit the estimates with his approval to the Staff Assistant to the President.

(*e*) The Staff Assistant to the President will combine the estimates of the various branches as received from the Sales Manager and submit a statement to the Production Manager showing the estimated factory requirements of all the branches.

4. The production estimates.

(*a*) The Production Manager will have available statistics which will show the capacity of the machines in each department of the factory. From these statistics he can estimate the production capacity of the factory.

(*b*) The Production Manager will compare the factory requirements as submitted to him by the Staff Assistant to the President with his records on production capacity and will make revisions if he thinks such are necessary:

(1) To reduce the factory requirements so as to bring them within the production capacity, or

(2) To increase the factory requirements on some items and decrease them on others so as to formulate a better proportioned production program.

It will be understood, of course, that the revisions made by the production department are only tentative and are subject to revision by the Advisory Committee as explained later.

(*c*) On the basis of the factory requirements as revised by him, the Production Manager will estimate the finished goods which must be produced during the budget period. In making this estimate he must consider the inventory of finished goods at the beginning of the period and the desired inventory at the end of the budget period. The goods which must be produced will equal the factory requirements plus the ending inventory minus the beginning inventory.

(*d*) On the basis of the estimate of finished goods as prepared under "C," the Production Manager will estimate the cost of labor and the cost of manufacturing expenses for the budget period. He will also estimate the amount of raw materials required to produce the estimated amount of finished goods.

(*e*) The Production Manager will transmit with his approval to the Staff Assistant to the President:

(1) Revised estimate of factory requirements.
(2) Estimate of finished goods.
(3) Estimate of factory expenses.
(4) Estimate of raw materials required.

5. The estimate of materials cost.

(*a*) The Staff Assistant to the President will transmit to the purchasing agent the estimate of raw materials required as prepared by the production manager. The purchasing agent, taking into consideration the estimated inventory of raw materials at the beginning and end of the budget period, will prepare an estimate of purchases of raw materials for the budget period. He will indicate the month in which the purchases will be made, the terms on which made, and the date of payment.

(*b*) The purchasing agent will transmit the estimate of purchases of raw materials with his approval to the Staff Assistant to the President.

6. Plant and equipment estimates.

(*a*) The Production Manager will prepare an estimate of the plant and equipment required during the budget period. He will indicate the month in which each item of plant and equipment is desired.

(*b*) The Production Manager will transmit with his approval to the Staff Assistant to the President. The Staff Assistant to the President will transmit it to the Purchasing Agent who will make an estimate of disbursements for plant and equipment in the same manner in which he prepared the estimate of disbursements for raw materials.

(c) Each branch manager will prepare an estimate of the furniture and fixtures required at his branch for the budget period. He will transmit this to the Office Manager who will make such revisions as he thinks necessary and transmit it to the Staff Assistant to the President.

7. Estimates of departmental expenses.

(*a*) The head of each department of the business will prepare an estimate of the expense of his department for the budget period and transmit it to the Staff Assistant to the President.

(*b*) For the purpose of expense control, the various departments will be classified as follows:

(1) Administration.

i. The President's Office.
ii. Treasurer's Department.
iii. Auditor's Department.
iv. Purchasing Department.
v. Office Manager's Department.
vi. Traffic Department.

(2) Sales.

i. Office of the Sales Manager.
ii. Advertising Department.
iii. Branches.

(3) Production.

i. Office of Production Manager.
ii. Production Units expense of which is not charged directly to manufacturing.

(*c*) The procedure to be followed in the preparation of the expense budget for the various departments and executive units given in the foregoing outline will be as follows:

(1) The heads of each of the departments under the division "Administration" will transmit their estimates directly to the Staff Assistant to the President.

(2) The executive head of each of the sales units will prepare an estimate of the expenses for his unit and transmit it to the Sales Manager. The Sales Manager or a member of his staff will prepare an estimate of the expenses of his office. The Sales Manager on the basis of these various individual estimates will prepare an estimate for the sales department and transmit it to the Staff Assistant to the President.

(3) The Production Manager will prepare an estimate of the expenses of his office and combine this with the estimates prepared by the heads of the administrative units of the production department. He will transmit this to the Staff Assistant to the President.

All the estimates of departmental expense will show the expenses by months. The expenses of the various departments given in the foregoing outline will be of two kinds:

(*a*) Payroll and (*b*) supplies. In most cases, the heads of the departments will indicate the estimated *consumption* of supplies for each month. On the basis of this estimate of consumption, the purchasing agent can estimate the purchases to be made and the monthly disbursements for these purchases.

8. Estimates of cash receipts and cash disbursements.

(*a*) The Staff Assistant to the President, working in conjunction with the Treasurer, will prepare estimates of cash receipts and cash disbursements for the budget period.

(*b*) In preparing the estimate of cash receipts, the following will be necessary:

(1) The accounts receivable outstanding at the beginning of the budget period will be analyzed and the estimated monthly receipts from these determined.

(2) The accounts receivable resulting from the estimated sales will be determined and an estimate made of the monthly collections from these.

(3) If any notes are held by the company, the estimated monthly receipts from these must be determined.

(*c*) In preparing the estimate of cash disbursements, the following will be necessary:

(1) The Treasurer will prepare an estimate of the disbursements for taxes, insurance, interest and other items which are under his control.

(2) The accounts payable outstanding at the beginning of the budget period will be analyzed and the estimated monthly disbursements in payment thereof determined.

(3) The accounts payable, which will be contracted in connection with the various estimates calling for disbursements, will be determined and an estimate made of the monthly disbursements required in payment of these.

(*d*) The form of the Estimate of Cash Receipts, the Estimate of Cash Disbursements, and the summary of Cash Receipts and Disbursements is shown in Exhibits 2, 3, and 4.

ESTIMATED CASH RECEIPTS

FOR QUARTER ENDING MARCH 31, 1922

(Exhibit 2.)

Source	January	February	March	Total
* Accounts Receivable				
Customers—Class A				
Schedule No. 1				
Customers—Class B				
Schedule No. 2				
Customers—Class C				
Schedule No. 3				
Notes Receivable				
Not Discounted				
Schedule No. 4				
Sales				
Customers—Class A				
Schedule No. 5				
Customers—Class B				
Schedule No. 6				
Customers—Class C				
Schedule No. 7				
Total				

* The classification of accounts receivable is on the basis of the terms of credit on which sales are made.

It is of course apparent that fluctuations in cost balance will have to be considered in determining the loans required.

9. Transmission of Estimates to the Advisory Committee. The first steps in the budgetary procedure have resulted in placing the preliminary estimates in the hands of the Staff Assistant to the President. Following this, the procedure includes:

ESTIMATED CASH DISBURSEMENTS

FOR QUARTER ENDING MARCH 31, 1922

(Exhibit 3.)

Purpose	January	February	March	Total
Notes Payable				
Accounts Payable				
Outstanding, Jan. 1				
Estimated Cash Disbursements for Purchases				
Factory Payroll				
Department A				
Department B				
Department C				
Departmental Expense				
President's Office				
Treasurer's Dept.				
Auditor's Department				
Purchasing Department				
Office Manager's Dept.				
Traffic Department				
Sales Department				
Production Department				
New Equipment				
General				
Taxes				
Insurance				
Interest				
Miscellaneous				
Total				

SUMMARY OF CASH RECEIPTS AND DISBURSEMENTS

FOR QUARTER ENDING MARCH 31, 1922

(Exhibit 4.)

Disbursements	January	February	March	Total
Receipts				
Loans Required				

(*a*) Delivery to the Advisory Committee. The Staff Assistant to the President transmits to the Advisory Committee all of the estimates that have been submitted to him on a given date.

(*b*) Review by Advisory Committee. The Advisory Committee will consider the various estimates. If they are satis-

factory to it, the Committee will return the estimates approved to the Assistant to the President. If they require revision, it will indicate where they should be revised, and then transmit them to the Assistant to the President.

(*c*) Transmission to the Departmental Heads. Upon receiving the estimates from the Advisory Committee, the Staff Assistant to the President will return the estimates to the heads of the various departments. They in turn will make whatever revisions in their estimates that have been suggested by the Advisory Committee.

10. Preparation of Reports.

When the estimates have been approved and revised by the Advisory Committee, the Staff Assistant to the President will draw up a series of forms to be used by the heads of the various departments in drawing up their reports of performance. Periodic reports will be submitted to the Staff Assistant to the President showing a comparison of the estimated performance with the actual performance. These reports he will transmit to the Advisory Committee. If it desires to revise the budgets during the period, it will suggest its revisions to the Staff Assistant to the President, who will notify the department heads.

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CHAPTER XIV

INDICATORS OF COLLECTIONS

Types of collection indexes.—It is desirable, at the outset, to keep in mind the distinction between the so-called index of general collection conditions, and the index of collection for a business enterprise. In addition, we shall distinguish between indexes of collection for an individual concern in the accepted meaning of the term, and, what we shall call here, indicators of collections. It is this "indicator of collections" in which we are interested for the present discussion.

General indexes of collection conditions.—General indexes of collection conditions are derived from various data purporting to show the degree of ease that obtains generally, at any given time, in paying debts. Such indexes are supposed to indicate whether collections are "good" or "bad" in separate industries, "lines of business," certain geographical sections, or the country as a whole. The construction of these general indexes of collection conditions embraces a variety of methods and data.[1] Some of these methods aim at obtaining direct collection information from business firms. This is invariably true of the collection indexes of individual trades. One may find a good example of this type in the index used by wholesale grocers. About twelve state or territorial associations regularly obtain reports each month from a part of their membership, and, from this data, derive a collection index for the trade. At the other extreme, we find the method and data used in indexes purporting to show the state of collection conditions in parts, or in all, of the country. These latter, of course, have nothing to do with separate "lines of business," or industries. They are often based, therefore, on secondary and indirect collection data. Since these indexes deal rather loosely with the impressionistic information upon which they

[1] W. H. Steiner, "Methods of Developing an Index of Collection Conditions," *Journal of American Statistical Association,* December, 1920.

are built, they are often of a too ambitious nature. Nevertheless, such attempts must be regarded in all seriousness, for they endeavor, at least, to meet an urgent need for collection information. The index compiled by the National Association of Credit Men is a good example of this type.

Construction of general indexes.—The problem of developing an index of collection conditions is well stated by Dr. W. H. Steiner:[2]

1. Two principal methods exist by which an index of collection conditions may be constructed:
   (a) Through special reports relative to collections obtained from individual houses by a central agency which prepares composite figures.
   (For example, the one compiled by the Wholesale Grocers' Association.)
   (b) Through compilation by a credit exchange bureau of information regularly obtained in the course of its ordinary operations, relative to the credit standing of individual buyers.
   (For example, the one compiled by the National Association of Credit Men.)
2. Great difficulty is experienced in defining the statistical unit to be employed in measuring the status of collections, inasmuch as credit conditions, in particular terms of sale, vary greatly from industry to industry. These differences are reflected in the methods now employed by individual business houses in following the status of their own collections.
3. Where the problem is approached in the first manner, indicated under (a) above, it would appear best to adapt the method employed to the methods now in use by the individual business house in that industry, varying the method from industry to industry in accordance with the credit conditions peculiar to each. In industries where no relatively standard method is employed, adaptation of the methodology to the records of business houses and to the credit conditions in the industry would be necessary. We thus gain in the more perfect reflection by the index of the collection situation in the given industry; but, on the other hand, we lose in that our data, due to differences in methods of constructing the index in different industries, lack comparability as between these industries.

[2] *Op. cit.*

4. Only one instance has been noted of the construction of an index in the second manner, mentioned above under (b). Reports obtained in this manner, of course, are limited to the credit information given on the blank employed, as use must be made of these items. The principal problems which then arise in its construction relate to the choice of a number of accounts versus quantities in dollars, the construction of a strictly continuous series employing the same firms each month, the selection of the industries to be included, and the method of presenting the index, whether, as in the illustration mentioned above, past-due accounts each month to be shown as a percentage of total accounts that month, etc. The problems in this connection do not differ greatly from those experienced in the construction of the other type of index, with the exception that the field of choice is much narrower, due to the small variety of items with which to work.
5. It would appear that advantageous use might be made of the credit interchange bureau in certain industries. In many, however, it would be necessary to obtain special reports from individual houses relative to the status of collections. More important than the question of choice between these two methods of approach is the actual gathering of data showing the collection situation in order that, through careful analysis of the same, conclusion may be reached in the various issues indicated above and the way paved for an accurate and scientific index of collection conditions.

This extract is presented to give the reader an idea of the extreme difficulties involved in the construction of these indexes. The work done in that line, however fragmentary, serves as a valuable aid to individual concerns in estimating their income. It should be utilized, in so far as it is relevant, in connection with the firm's "indicator" of income. Indexes of collection for individual concerns, as was stated at the beginning of this chapter, may be of two kinds: (1) There is the usual type which reflects either the firm's past collections, or the status of its current collections, including receivables—often called outstandings—or both. (2) There are "indicators" of collections which are not, as a rule, given close attention. These indicators emphasize the future rather than the past or present, dealing with the latter only in so far as they serve as a basis for pointing to probable future income.

Continuous flow of working funds.—In the two preceding chapters emphasis was laid upon the continuous nature of

income and outgo. These two opposite flowing streams constitute the concern's working funds. On the one hand, the expenditures for operating purposes cause funds to flow out through the various items of cost. On the other hand, the business assets resulting from such productive employment of funds yield funds in return, through the selling of products and the collection of proceeds. The procedure in investing working capital is usually as follows: (1) sales are estimated; (2) estimates of requirements such as materials, wages, etc., are made; (3) purchasing and production plans are formulated; and (4) estimates are made of income to be derived from past and current sales, in order that the financial requirements of carrying through the operations contingent on estimated sales may be met.

Income must be estimated.—Every business concern must estimate its income just as it must estimate its sales, purchases, production, etc. All business management is directed toward the end that income shall be able to meet outgo, or, if this is impossible, then to judge the extent to which it is possible, so that borrowing may be done with as much accuracy as may be, and so that the investing of surplus working capital may be made upon a profitable as well as a judicious basis.

The abstract problem of collection.—The problem of collection estimates contains certain major elements which are exceedingly variable, and these variables greatly complicate its solution. This is true not only of general collection indexes, but also of indexes of collection for individual enterprises, and especially of income "indicators." In order to visualize the problem clearly, an attempt is made here to present it in a static and abstract form.

Nature of income.—To get to the very roots of the sources of income, we must seek them at the place and time of original expense or cost. These expenses or costs are many and varied, for the channels of outgo represent a wide array of items. Furthermore, funds flow out of a business enterprise through these channels, in the form of continuous payments. The major current assets—inventories and receivables—contain these funds expended in a more or less crystallized form. But inventories precede sales, while receivables follow them in point of time. Yet, in spite of the variegated nature of the

particular items of expense, their productive use causes them, once expended, to converge in inventory. Inventory may be said, therefore, to become the chief repository of funds expended. As we have pointed out before, the nature of an inventory policy may vary all the way from a hand-to-mouth kind to the carrying of stocks over extended periods. In a similar manner, the volume of receivables that a firm carries may vary on its books or in its portfolio. So that the intermediate stages, in the flow of working funds or capital through an enterprise, between expense and income, are inventory and receivables, but these are bridged by sales.

Basis of income expectancy.—The next point to be considered in developing an indicator of income is the basis of expectancy. It is chimerical to assume that a firm can tag each dollar expended and time its return. Dollars are dispersed among many hands as soon as expended. But these dollars leave in their places products to be sold, and cause other dollars to return to the concern that expended them. In casting about for a basis upon which to estimate income, sales occur to the mind immediately, as possessing potential qualifications for such a basis. As a basis for expectancy, then, estimated sales would be the natural measure of income. Provided the concern sold for cash only, this basis would be a simple one and easy to reckon from. But most firms do not sell on a cash basis; therefore, we must qualify our use of sales as a basis, in the following way: A firm may receive, in part, cash, at the time of sales, and, in part, receivables; it may sell entirely on time, for receivables; or it may use terms of sale with a cash discount, and net terms or datings, offering the buyer a choice of two periods within which to pay, neither meaning immediate cash, or the same amounts, to the selling firm—for, if the bill is discounted by the buyer, the cash remitted is the face of the bill less the cash discount, whereas, if the net terms are taken, the total of the original bill is remitted. There are, then, four general methods of payment:

1. Sales may yield immediate cash.
2. Sales may yield, in part, immediate cash, and, in part, receivables.
3. Sales may yield receivables only.

4. Sales may yield, in part, cash, at the end of discount period, equal to the total of the bill less the discount, and, in part, receivables.

Methods illustrated.—The above methods of obtaining income from sales may be illustrated thus: (1) A firm sells for cash over the counter or ships C.O.D. Such terms of sale, perhaps, as approximate cash, might be included here, for instance, as ½ per cent ten days, for bacon, hams, and zinc, or 1 per cent ten days for brick, china, gasoline, glove leather, hosiery, kerosene, lumber, overalls, pottery, shirts (working), shoes (New England), spools, and yarn. There are such terms, even with a higher cash discount for ten days, in many other industries.[3] (2) There are those firms which do not offer a cash discount, but obtain cash on sales. For example, a firm might deal, in part, with cash-paying customers, or with poor credit risks which are sold to only on the basis of cash or C.O.D. But such firms may also sell on time and may be willing to grant credit to those whose credit is considered worthy. (3) A good many concerns sell almost exclusively on the basis of net terms only. They do not offer a cash discount for anticipated payment, nor are they in the habit of demanding cash at the time of sales. (4) By far the greater proportion of firms falls in the class which grant both cash discounts and net terms.

Analysis of income stream on basis of terms of sale.—This classification of firms according to terms of sale has been roughly made, for it would be impossible to list and group all the varieties of terms that obtain in the business world. But it must be remembered that these terms of sale greatly modify the method of estimating income from the estimated sales. Since the stream of current cash income, as well as the estimated stream of cash future income, is a mixture derived from the effects upon the motivation of the buyers of the various terms of sale, the estimates of income must therefore be made on a composite basis. We might state this proposition in outline form, in accordance with the classification given above:

[3] W. H. Steiner, "Terms of Sale," Statistical Department Federal Reserve Board, Federal Reserve *Bulletins*. Also see his book "Mechanism of Commercial Credit," Part II.

1. Volume of estimated sales would *ipso facto* serve as the basis of estimating income, since a direct correlation exists between these two elements.

2. Length of the net terms of sale being known, the volume of estimated sales would yield a stream of cash, at the time of sale, equivalent to the cash sales; while the receipts from the time sales, or receivables, would lag a length of time equivalent to the length of the net terms offered.

3. Length of net terms being known, the estimated volume of sales would yield a stream of cash income with a lag of time equivalent to the length of net terms offered.

4. Length of net terms, the size of the cash discount, and the length of discount period being known, the estimated volume of sales will yield a stream of income equivalent to: (1) the volume of sales discounted, minus the rate of discount allowed with a lag in time equal to the cash discount period; (2) the volume of sales obtaining prior to the estimated time of ncome and equal to the length of net terms offered, for which receivables were taken.

Internal variables in income estimates.—From the standpoint of the internal conditions of an enterprise, the estimates of income are influenced more or less by certain changing factors. In the first instance, the volume of actual sales may vary from the volume of estimated sales. Such a discrepancy between the actual and the estimated sales naturally affects the income. In the second instance, the proportion between cash and time sales is likely to vary, whether the ratio between spot cash and time sales or the ratio between cash discounted and time sales is considered or not. In the third instance, the terms of sale may be altered by a firm. This alteration may be in the length of net terms, in the length of the cash discount period, or in the rate of discount allowed. Instances one and two affect the time of the income, while the third affects the size of the income; but the latter may also indirectly affect the proportion between cash discounted and time sales, according to whether the rate of cash discount is raised or lowered. Similarly, the same effects might result if the cash discount period were lengthened or shortened. In the fourth instance, there are two other important variable influences that should be taken into account in estimating income from sales, and these are

directly the result of the firm's policy. One of them is the collection policy pursued. Unless a definite collection policy is consistently adhered to, a regular follow-up system practiced, an alternatingly loose and rigid collection policy will obtain, disturbing an otherwise relatively determinate basis for estimating income. The other influence, equally potent in its effects on income estimates, is the policy of advanced production and advanced marketing. In many seasonal lines of business, as has been pointed out in previous chapters, it might be profitable to distribute production more or less evenly over the year. If this is the policy prevailing, the usual system of datings is adopted, in order to get the product into the hands of the buyers before the actual purchasing by the consumer is in season. Unless such a policy is the regular procedure with an enterprise, the basis of estimating income can be seriously altered. In so far as a firm habitually follows this policy of advanced production, and seasonal datings of advanced sales to the buyers, its case is not so different from that of concerns which sell on other terms.

External variables in income estimates.—Influences arising from without the concern, but which enter into the collection problem, are legion in variety and variability. Generally speaking, they are in the field of the so-called momentary and credit conditions. These conditions are represented by such factors as the amount of money in circulation, which, in turn, is predicated on the volume of bank credit in use or bank debits to individual accounts and the velocity of circulation of money, as well as its circuit velocity.[4] Naturally, the extent to which money and credit is used in circulation has a direct bearing on the ease or difficulty with which debts can be paid. Such conditions are often reflected in the general indexes of collection conditions referred to in the earlier pages of this chapter. Bankruptcy figures are not to be overlooked in this connection. It must be observed, moreover, that the volume of bank loans or deposits outstanding is not necessarily an indication of the volume of money available for payments. For example, it is common knowledge that the volume of bank loans, deposits, and interest rates continues to expand

[4] Irving Fisher, "Purchasing Power of Money." Foster and Catchings, "Money," Chapter xviii.

for from six to nine months after the peak has been reached by wholesale prices and production. It would seem, then, that, in the earlier stages of liquidation periods especially, the increasing amount of money is not an indication that collections are easy. Rather to the contrary; for in such periods the velocity of money in circulation, as well as the circuit velocity of money, is seriously retarded, and more than offsets the otherwise favorable effects to be expected from the increase in the volume of bank credit. So we must look beneath and further than financial aspects of the external collection conditions.

Beneath all credit transactions lie the physical and industrial factors as the basis of credit. The mobility and supply of funds available for use by the business world hinges to a large extent on the rate of production, the marketing, and the consumption of goods. Actually, the production process represents a continuous flow of money in one direction and of goods and services in the reverse direction. To confine our analysis to the field of money—which is made up of approximately 90 per cent commercial banking funds—and to the field of working capital, the liquidity and use of credit depends almost entirely upon the salability and marketability of goods or merchandise inventories and the collection of receivables. The amount of money that will be used by the business community is predicated upon the trend of prices and business conditions or markets, while the rapidity with which it circulates depends on the rate of movement of goods from the producer to the consumer, or through the production process, and on the collections of the proceeds of sales. It can readily be seen, therefore, if inventories or goods cannot be moved off into the market, or if the rate of such movement is retarded, the opportunity for making payments is restricted—which means that, when such a condition becomes generalized, receivables, also, become less liquid, which leads to a slowing up of all collections for business enterprises. When such stultifying credit conditions have arisen in the industrial and mercantile fields, and mercantile credits become frozen, appeal can be made temporarily to the banks; but sooner or later that recourse becomes closed, as does also the security market.

Much of this discussion has been presented more completely in earlier chapters, and it is only desirable at this point to emphasize the important bearing that these external busi-

ness factors have on the problem of developing an indicator of income for an individual concern.

The practical construction of an income indicator.—The essentials for a collection indicator are: systematized data of past and current collections. Correlations between the various factors that enter into the collection problem, such as sales, cash sales, time sales, and the varying proportion between time and cash sales, should be clearly apprehended. The relation between the actual sales and the derived income resulting from the various methods of payment should be studied, so that the characteristic behavior of a firm's collections are brought into relief. This work is important, in order to interpret in the most effective way the data upon which income estimates are to rest. Past and current data on the various aspects of a firm's income must serve as a guide to the future; and future estimates of income must be judged on the basis of the prospective conditions that may affect such income. Furthermore, attention must be directed to the fact that sales in most lines of business occur continuously, and, therefore, there is a continuous stream of income from the various methods of payment. However, in some lines of business where E.O.M. (End of Month) terms prevail, which means that all bills are due at the end of the month, or before a certain date, or that all bills dated before or on the 25th of the current month are due on the 1st of the following month, there is a certain cleaning-up date. Between the end-of-the-month dates, there might still be outstanding overdue accounts or bad debts. But the point is that, in most lines of business, no such periodic dates for income exist. Again, in the case of highly seasonal lines of business, a policy might be followed similar to that of E.O.M. terms, for in such lines the datings amount practically to the same as concentration of payments.

Necessity of limiting cases presented.—In order to simplify the method of constructing an indicator of collections, several typical examples will be considered. These cases will be types of concerns which present, in their collection problems, certain standard combinations of elements. It is impossible to consider all the various collection estimates that might fit the special conditions surrounding each and every business enterprise. But any one of the various types offered here, which correspond also to the classifications on page 408, may

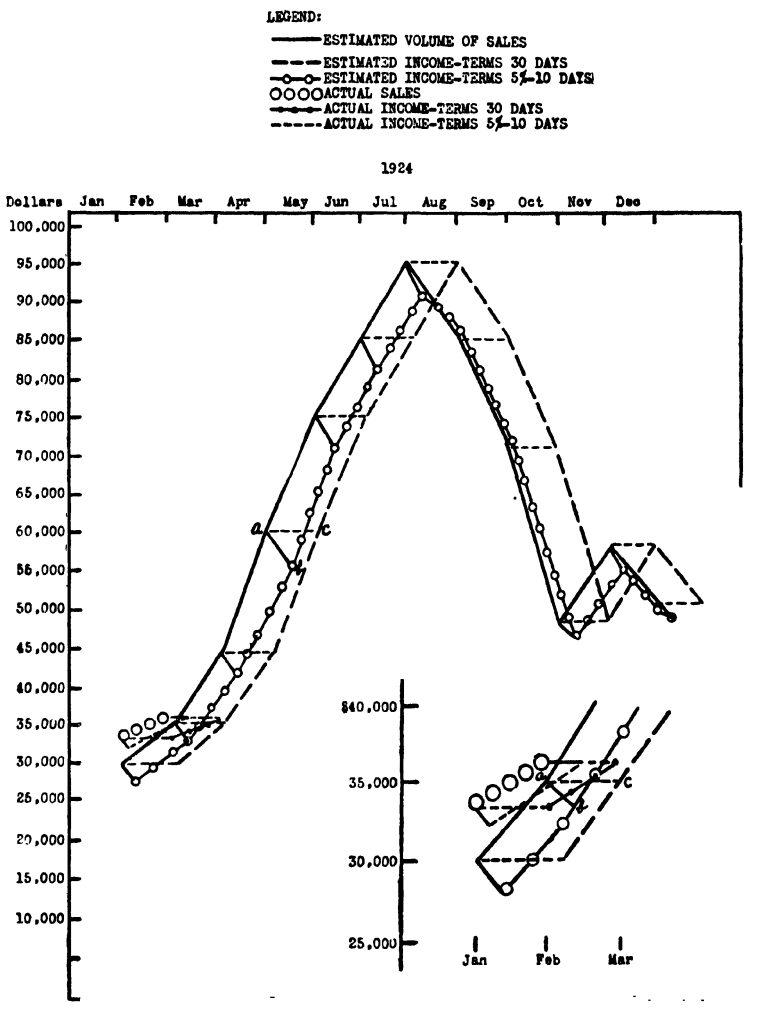
be modified to fit the requirements of any individual concern.

Case number one.—Let us assume that the firm sells for cash, or approximates cash sales, as do those that sell for ½ per cent 10 days, 1 per cent 10 days, etc. This case presents an extremely simple problem in estimating collections. Once the sales are estimated for the year, and apportioned among the twelve months, the derivable income is easily estimated with proper deductions for the discounts and adjustments to the ten-day lag incident to the discount period. A clear illustration of this case is provided by the figures of an actual concern dealing in ice cream and dairy products, charted below:

Sales 1924		*Estimated Income for 1924*	
Estimated	*Actual*	*Terms of Sale, Net 30 Days*	*Terms of Sale, 5 Per Cent 10 Days*
Jan. $30,000	$34,174		Jan. $28,500
Feb. 35,500	36,462		Feb. 33,725
Mar. 44,500			Mar. 42,275
Apr. 60,866			Apr. 57,823
May 75,534		Same amounts as estimated sales for 1924 with figures moved forward one month or 30 days.	May 71,757
June 85,358			June 81,280
July 96,407			July 91,587
Aug. 86,519			Aug. 82,193
Sept. 71,211			Sept. 67,650
Oct. 48,738			Oct. 46,301
Nov. 58,875			Nov. 55,931
Dec. 50,623			Dec. 48,092

Explanation of chart.—The chart on page 415 shows graphically how income estimates run parallel with estimated sales. The terms are 5 per cent–10 days. The line *ab* connecting the estimated sales with the estimated income, attempts to measure both the lag of 10 days in payments, and the 5 per cent reduction from the sales, representing discounts allowed. Superimposed on the same chart is the line representing estimated income, on the basis of the assumed terms of sale—net 30 days with no cash or discounts allowed. This line is connected with the estimated sales line by dotted line *ac* which shows the lag of 30 days of estimated income equivalent in amount to the estimated sales. Thus, the estimates may be checked each month with the actual receipts for the month. In the case of the income estimated on the basis of 5 per cent–10 days, a similar check is possible on the 10th day of the succeeding month. (This illustration of Case No. 1 was made illustra-

tive also of group No. 3, as outlined on page 408, because of its simplicity.) If a firm sells solely on the basis of net 30 days,



Income Chart for Firms of Cases 1 and 3.

or one month, its outstandings or receivables on the 1st of each month should be equivalent to the preceding month's sales. A simple method of calculating, to determine whether this is true, is to find the average volume of sales per day dur-

ing the preceding month and to divide this figure into the total amount of receivables on hand on the 1st of the month. The result should equal 30, or the number of days in the month. The figures in excess of 30 would then represent the overdue receivables, in terms of number of days' sales outstanding. This can be illustrated by the figures of the above company:

Sales for the Month of April	$60,866	
Amount of Receivables on Hand on May 1st	$62,350	
Average Sales per Day 60.866 ÷ 30	$ 2,028	
Number of Days' Sales Outstanding in Receivables 62,350 ÷ 2,028		30.7 days
Overdue Receivables in Terms of Days' Sales .7 × $2,028	$ 1,420	

Checks and adjustments.—This method of checking up collections will serve advantageously in determining the status of income at regular intervals. In case the actual sales have not conformed to the estimated sales, which developed according to the figures above, then the income estimates must be adjusted on the basis of the discrepancy found between estimated and actual sales. The sales estimates of January and February of $30,000 and $35,000, respectively, fell below the actual for these months, in that the actual were $34,174 and $36,462. This meant a corresponding adjustment in the estimated income. If the terms of sale were 30 days net, or 5 per cent, 10 days, the income could be estimated exactly as above described (see Chart).

Case number two.—The second case to be considered assumes that the estimated sales yield, in part, immediate cash, and, in part, receivables. The regular department stores are typical of this line of business. These stores, as a rule, do a rather large cash business over the counter daily, and, for the convenience of the customers, or for the purpose of stimulating sales, usually give credit on E.O.M. terms as well. Bills are sent out on the first of the month and remittances, in most cases, bulk largest around the 10th. Many department and retail stores consider accounts to be due between the 1st and the 20th of the succeeding month. After the 20th, unpaid accounts are recorded as "bad" and their collection is undertaken. These terms differ from those assumed under Cases Nos. 1 and 3, in that the former sales yield immediate cash

over the counter and end-of-month receivables, the collection of which is concentrated on or about the 10th day of the succeeding month; while the latter terms yield cash immediately, or on a 10-day discount basis of 5 per cent, or as 30-day receivables. In the present problem, the basis for income estimates is again the sales expectancy; but cash, in part, is immediately obtained when sales are made; and receivables, no matter when incurred during the month, are collected when remittances come in, bills having been sent to credit customers on the first of the succeeding month. Construction of a type indicator of income for firms which sell on these terms is illustrated on page 418.

Reasons for method used.—The actual sales during 1923 manifest a typical variation in the year's business of a department store. The ratio of credit sales to total sales varies within reasonable limits, and these variations differ as between individual stores, and, for the same store, from year to year, with the changing fortunes of the business cycle. The changes in this ratio shows the corresponding proportions of immediate cash and receivables from sales. The necessity of obtaining data for the items in the above table over a period of years is of particular importance, since, without the records of the past and present, the future cannot adequately be estimated. Every concern can, with little expense and energy, determine the nature of the fluctuations, the trend of these items, and the significant relations that exist between them. If the question, When will cash come in? is to be answered, the proportion between cash and time sales is exceedingly important. After sales have been estimated in advance, the second step in formulating the basis of expectancy is to forecast the probable proportions between cash and credit sales. This is, to some extent, an internal business problem, but also to a larger extent a factor to be determined by the business conditions which affect the income of customers. Finally, after the receivables have been estimated, the task is to gather experience tables which should indicate the time consumed after the first of the month before these receivables have been collected. These tables should be constructed from post collection data.

Explanation of chart.—The chart on page 419 aims to present a simple graphical device for estimating and checking up income for business concerns under Case No. 2. It would

INDICATOR OF INCOME

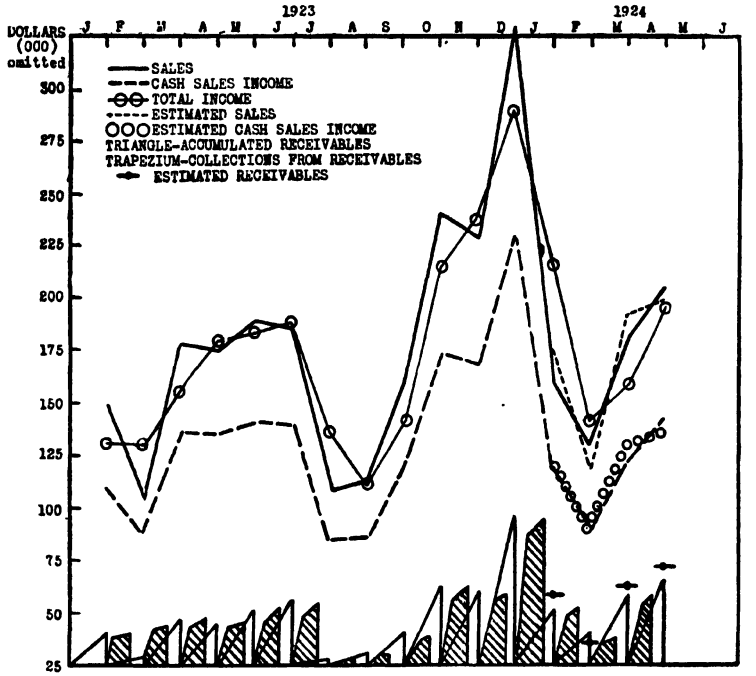
	Sales Actual, 1923	*Percentage of Proportion of Credit Sales to Sales*	*Receivables 1923*	*Cash*	*Total Income* *
Jan.	$151,300	28	$42,364	$108,936	.....
Feb.	116,100	25	29,025	87,075	$129,439
Mar.	179,500	27	48,465	131,035	160,060
Apr.	176,000	26	45,760	130,240	178,705
May	188,300	28	52,724	135,576	181,336
June	186,500	29	54,085	132,415	186,139
July	110,800	24	26,592	84,208	138,293
Aug.	114,400	25	28,600	85,800	112,392
Sept.	158,400	25	39,600	118,800	147,400
Oct.	241,100	27	65,097	176,000	215,600
Nov.	228,800	26	59,488	169,312	234,409
Dec.	326,100	30	97,830	228,270	287,758

	1924		*1924*		*1924*		*1924*		*Total*
	Estimated	*Actual*	*Estimated*	*Actual*	*Estimated*	*Actual*	*Estimated*	*Actual*	*Income*
Jan.	$175,000	$168,900	31	31	$54,250	$52,359	$120,750	$116,541	$214,371
Feb.	120,000	127,200	29	30	34,800	38,160	85,200	89,040	141,399
Mar.	190,000	180,000	32	32	60,800	57,600	129,200	122,400	160,560
Apr.	200,000	206,000	33	32	66,000	65,920	134,000	140,080	197,680
May	220,000	.....	34	..	74,800	.....	145,200	.....	† 211,180

* Current months' cash sales plus previous months' receivables = Total Income.

† Estimated.

be desirable, as previously emphasized, to plot these items over a period of years, in order to obtain an adequate past record to act as a guide in the construction of future estimates. A chart, like the one here given, should be drawn up for a year in advance. The proportions between cash and credit



Income Chart for Firms of Case 2.

sales should also be estimated, and, in addition, an ideal collection plan drawn up. The triangles, which indicate the accumulations of receivables, can be checked by periodical comparison with actual outstandings. If the collection of these is concentrated around the 10th, but is spread all the way from the 1st to the 20th of the succeeding month, the diagonally barred trapezium indicates the sum to be collected in terms of accounts receivable. The line on the left presumes an accumulation of collections of cash from outstandings between the 1st and the 10th of the month similar to the accumulation of

receivables during the preceding month. After the 10th to the 20th period, the upper, or limit, line progresses more gradually, indicating that collections after the 10th are gradually falling off as the "bad" account date is approached. Collection policies should be so formulated and carried out that, in checking the results, the comparison with the left and upper line of the trapezia will indicate the progress made.

Case number four.—The last type of payment, which consists of both cash discount and net terms, gives rise to many complications when an indicator of income is sought for concerns in whose line of business such terms prevail. This is because of the number of variables contained in the collection estimates. These variables are: (1) volume of sales, (2) length of net terms, (3) size of cash discounts, (4) length of cash discount periods, and (5) proportion between discounted and nondiscounted sales. For our purposes, the terms of sale which contain these variable elements will be expressed thus: 2 per cent–10 days—net–30 or 60. Between different lines of business these terms vary greatly. Different combinations of size in cash discounts, length of cash discount periods, and net terms are found. Besides, some terms have added features, such as anticipation and graded rates of discount, or extra time after the net terms, etc.[5] It seems almost too presumptive, in view of these endless varieties of terms of sale, to attempt a suggestion regarding the construction of a basis for income estimates for concerns coming under this classification. For these concerns it is of paramount importance to have on hand systematic income data over an extended period in the past, as well as correlations of this data with data of relevant factors manifesting the influence of past business cycles. A systematic regimentation of data, concerning the above variable elements in the problem, may lead to a fairly accurate basis for estimating income. A firm may understand its practices in reference to granting credit, and, in many lines of business, terms of sale are rigidly standardized, but the trend of business conditions exert a potent influence on terms of sale of any individual concern, since general competitive factors are often at work to upset the terms adopted. So, even though an enterprise may know what its credit terms will be, it is,

[5] W. H. Steiner, "Mechanism of Commercial Credit," Part II.

TERMS 2 PER CENT–10 DAYS—NET–60 DAYS

	Sales		Ratio of Discount Sales to Total Sales		Cash—2 Per Cent–10 Days		Receivables Net 60 Days	
	1923	*1924*	*1923*	*1924*	*1923*	*1924*	*1923*	*1924*
	Actual	*Estimated*	*Actual Percentage*	*Estimated Percentage*	*Actual*	*Estimated*	*Actual*	*Estimated*
Jan.	$151,900	$168,500	30	31	$45,570	$ 52,235	$106,330	$116,265
Feb.	159,100	177,200	28	29	44,548	51,388	114,552	125,800
Mar.	209,900	372,800	32	33	67,168	123,024	142,732	249,776
Apr.	181,400	201,800	34	34	78,002	86,774	103,398	115,026
May	213,700	237,200	34	32	72,658	75,904	141,420	161,296
June	178,000	197,300	33	31	58,740	61,163	119,260	136,137
July	170,000	189,000	32	30	54,400	56,700	115,600	132,300
Aug.	208,700	231,000	30	30	62,610	69,300	146,090	161,700
Sept.	170,100	189,900	29	28	49,329	53,172	120,771	136,708
Oct.	169,900	189,200	28	26	47,572	49,192	122,348	140,008
Nov.	205,900	228,600	30	27	61,770	61,722	144,130	166,878
Dec.	165,300	185,200	31	28	51,243	51,856	114,057	133,344

nevertheless, constantly subject to external influences. This is also true in regard to the changing proportion between cash and credit sales, though a concern may exercise discretion as to whether credit should be granted in single cases, as well as the amount to be granted. Firms offering such terms as here described find that their income consists of four streams, namely, (1) cash from those taking the cash discount—which amount will consist of that portion of estimated or actual sales so paid, minus the amount equivalent to the discount; (2) amounts paid at the expiration of the net period; and (3) the amounts coming in before the end of the net period, or after this period. Payments prior to the expiration of the net period are normally made only when anticipation rates are offered, while payments in arrears of this net period really represent overdue receivables. Again, the problem of estimating income in this connection might take the form of resolving the factor that predicates income into (1) sales for the period, (2) collections within a given period, and (3) receivables on hand at the end of that given period. The data given on the previous page are taken to serve as the basis for a problem which will point to a plan for estimating a firm's future income.

INCOME FROM DISCOUNTED SALES

CASH MINUS 2 PER CENT

	1923 —ACTUAL—		1924 —ESTIMATED—	
	Discount	*Amount Received*	*Discount*	*Amount to be Received*
Jan.	$ 911	$44,659	$1,045	$51,190
Feb.	891	43,657	1,028	50,360
Mar.	1,343	65,825	2,460	120,564
Apr.	1,560	76,442	1,735	85,039
May	1,453	71,205	1,518	74,386
June	1,175	57,565	1,223	59,940
July	1,008	53,312	1,134	55,566
Aug.	1,252	61,358	1,386	67,914
Sept.	987	48,342	1,063	52,109
Oct.	951	46,621	984	48,208
Nov.	1,235	60,535	1,234	60,488
Dec.	1,025	50,218	1,037	50,819

RECEIVABLES AT END OF EACH MONTH

1923 *Actual Chain Amounts* (Add and Drop Month)		*1924* *Estimated Chain Amounts* (Add and Drop Month)
$220,882	Jan. Feb.	$242,065
257,284	Feb. Mar.	375,576
246,130	Mar. Apr.	364,802
244,818	Apr. May	276,322
260,680	May June	297,433
234,860	June July	268,437
261,690	July Aug.	294,000
266,861	Aug. Sept.	298,408
243,119	Sept. Oct.	276,716
266,478	Oct. Nov.	306,880
258,187	Nov. Dec.	300,222

CASH INCOME INDICATOR

	1923 —*Actual Cash Income*—			*1924* —*Estimated Cash Income*—		
	Cash, Discounted Sales	*Collection of Receivables*	*Total*	*Cash, Discounted Sales*	*Collection of Receivables*	*Total*
Jan.	$29,773	....	....	$50,866	$144,130	$194,996
Feb.	43,991	....	....	50,636	114,057	164,693
Mar.	57,988	$106,330	$164,318	97,163	116,265	213,428
Apr.	72,903	114,552	187,455	96,881	125,800	222,681
May	72,951	142,732	215,683	77,937	249,776	327,713
June	62,112	103,398	165,510	64,755	115,026	179,781
July	54,729	141,420	196,149	57,024	161,296	218,320
Aug.	58,676	119,260	177,936	63,798	136,137	199,935
Sept.	52,681	115,600	168,281	57,378	132,300	189,678
Oct.	47,195	146,090	193,285	49,508	161,700	211,208
Nov.	55,897	120,771	176,668	56,394	136,708	193,102
Dec.	53,657	122,348	176,005	54,043	140,008	194,051

Factors in problem of case four.—The problem presented here for solution, on the basis of the above data, rests on these factors: (1) estimated sales; (2) estimated proportion be-

tween cash discounted sales and total sales; (3) the derivable cash income from discounted sales, minus the amount of cash discount, with a lag of 10 days behind sales; (4) the derivable cash from collections of 60-day receivables which lag 60 days behind sales; and (5) the combined cash income indicator for both cash-discounted sales and collections of receivables for each month.

Steps in construction of indicator.—Sales estimates for a year in advance should follow the procedure described in the previous chapter. But, as a basis for expectancy of cash income, as was discussed before, sales offer only indefinite, though fundamental, information. Where a concern is selling on both cash discount and net terms, the probable proportion between the cash discounted and the total sales becomes exceedingly necessary to the next step. In such a calculation, the records of past proportions, and the general credit conditions, or those within the industry, and the stage of the business cycle, must be resorted to in forming an estimate. The derivation of this ratio requires close figuring and an accurate scientific method, for upon this basis rest the succeeding estimates of final income. As the above tables indicate, the proportion of cash to credit sales is evident in the columns of "cash 2 per cent—10 days" and "receivables—net 60 days." But cash derivable from discounted sales yields an amount less the discount. This also has been calculated and presented in the tables. Furthermore, the volume of receivables on hand each month is figured by adding and dropping a month, which gives a continuous chain amount of 60 days' receivables. The final problem to be worked out is a combination of income estimates derived from cash discounted sales and collection of receivables. An estimate is proposed for each month, that is, the income indicator is to forecast the amount of cash to be received from both sources in each month. The manner in which this can be done is as follows:

1. Deduct the amount of cash discount from the amount of cash discounted sales.

2. For that month, for which an estimate of cash from cash discounted sales is to be derived, calculate the amount equal to 2/3 of that month's cash discounted sales and 1/3 of the previous month's cash discounted sales, and add the re-

sults. (The assumption here made is that the sales are distributed evenly over the month, and, since the discount period is 10 days, the receipts of 10 days of cash discounted sales would always fall in the succeeding month.)

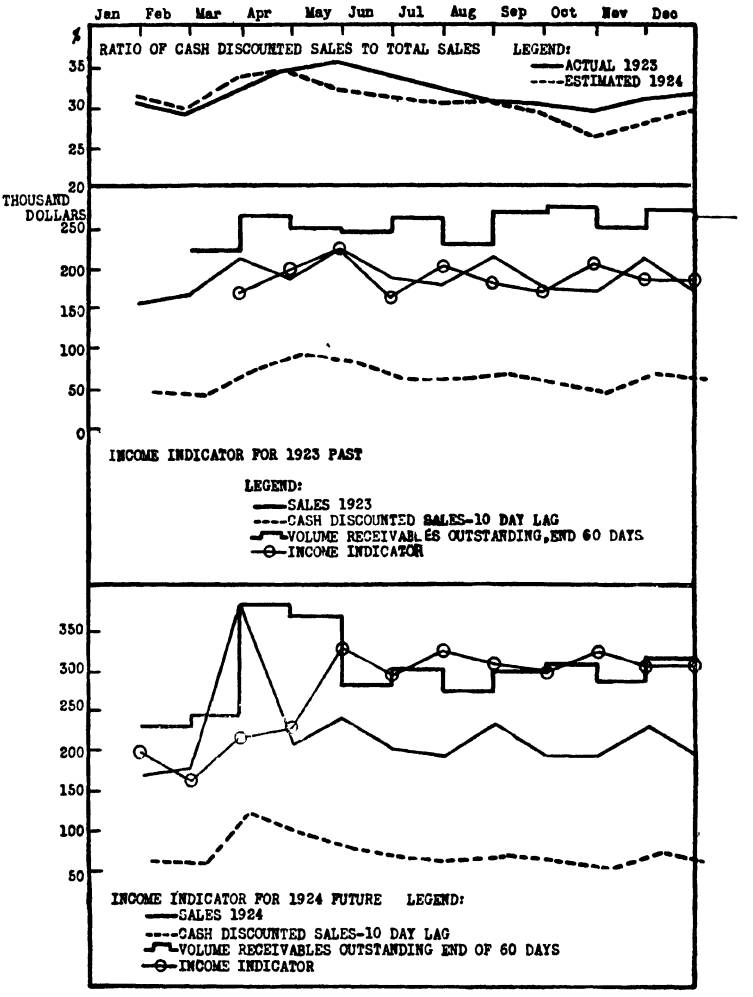
3. Determine the collection of receivables during that month, which would be an amount equal to the receivables obtained in the second month, previous to the month for which the estimated income is calculated. (For example, January receivables would be collected continuously during March, for, at the end of March, all of January's receivables will have fallen due.)

4. The combination of the income from cash discounted sales receipts, and collection of receivables would then give the estimated income for the month.

Description of chart.—The results of the calculation here presented are charted on p. 426. It can be readily seen that the income indicator line is a derivation of the cash receipts of discounted sales and collection of receivables, while the latter is determined by the proportion between cash discounted sales and total sales, all of which, in turn, rests on the estimated sales. The chart evidences a lag in estimated income, in relation to estimated sales, since the former has its time determined according to the 10-day discount period and the 60-day net term, or receivable period.

Necessity of system of checks.—Of course the data and chart so constructed are based on an ideal situation. It assumes an even distribution of sales over a month, a constant proportion during the month between cash discounted sales and credit sales, a prompt payment of cash at the end of the ten days—if cash discounts are taken by the buyers—a prompt payment of receivables at the end of 60 days, and an absence of the practice of taking cash discounts with payment before or after the 10-day period, as well as the absence of payment of receivables before or after the 60-day net period. Nevertheless, a standard income indicator devised according to the above plan will guide any concern in knowing what to expect and where it stands with reference to its flow of income. Any anticipations of income which might be discovered by checking actual income with estimates would indeed present no serious problem. On the other hand, tardy receipts should invite inquiry to determine the reason. If sales estimates do not

materialize, a revision of income estimates, based thereon, should be made. The same reconstruction becomes necessary



Income Chart for Firms of Case 4.

if the ratio of cash to time sales varies from the estimated.

In connection with the above problem, it is a matter of importance to have a convenient check on the estimates as measured by the actual performance. At the end of the month,

how much cash should have been received? This question can be answered only provided the factors in the problem are clear. These factors, namely, receipts from cash discounts and collections, are involved with the continual accrual of billed sales and receivables. If collections are made on schedule time, and cash receipts from discounted sales come in on time, then, on the 1st of each month, a check could be conducted on the basis of the chart on preceding page. Receivables on hand could be plotted and checked with the broken line representing the volume of receivables outstanding. If the accounts include one-third of the probable discounted sales, representing the last 10 days' sales of the previous month, which would be the case with most firms that use the open book account system, then this amount should be deducted from the so-called outstanding as determined by the accounts in the ledger. To state this in another way: if the purpose is to check outstandings on the first day of May against billed sales, the receipts would show a 100 per cent condition, if the receivables for March and April, of $246,130 plus $25,481, the last 10-day lot of probable discounted sales of the previous month, or $271,611, would be equivalent to the total outstandings on that day. If it is less, receivables and cash discounts have been anticipated or, if it is more, then the outstandings contain to that extent overdue accounts. If the estimated sales have been too high or too low, corrections can be made to correspond with the actual. Sufficient time would be available to readjust the receivable estimates and the income from their collection. However, the income estimates from discounts taken would be subject to more sudden change, if sales estimates did not materialize, since 10 days may be too short a period for a necessary reëstimate of the receipts from that source.

Coördination of outstandings with external collection conditions.—At this point, it is proper to consider again certain external aspects of a concern's collection problem. The immediate register of a firm's receipts, it is called "good," "fair," "bad," or such and such a per cent below 100 per cent, is the amount of overdue accounts. The prime necessity for checking up on receipts and collections is to determine the amount of outstandings from time to time. If they are abnormally large, payments are slow, which may mean that

one or all of the following conditions are affecting the customers' ability to pay. (Such influences as character of the debtor and other special conditions are included.)

1. Goods cannot be sold rapidly enough by the buyers to liquidate the current indebtedness. This may be due to:
   a. Overexpansion in the industry.
   b. Overstocking by the buyers, due to speculation in inventory or inability to sell.
   c. Demand insufficient to take goods off the market, which may be due to declining prices, or buyers' or consumers' indisposition to buy on insufficient income.
2. Buyers are unable to collect debts due them.
3. Banks are restricting loans and the investment market is generally unfavorable to borrowing.

Problem of estimating general collection conditions.—An aspect of the problem in this connection is this: How can a firm estimate the trend of general collection conditions? It was pointed out at the beginning of the chapter that there are in existence several indices of general collection conditions and, fortunately, in some lines of business, also, actual barometers of collection for the trade. A firm should avail itself of this information in estimating its own receipts for a period in advance. Besides, such services as Dun's and Bradstreet's give current information on collection conditions prevailing in the various parts of the country as well as for the country as a whole.

Correlating general collection data and concern's income.—Such past collection data as outstandings, with their past tendency in relation to what a firm has established as normal in its business, and past data on the proportion between cash and credit sales, or between cash discounted sales and net terms sales, should be systematically kept in tabulated form or in charts. This data should be correlated with certain indices of general collection conditions over as long a period as desirable, in order to discover any relationships between a firm's own income indicator and receipts, and those of certain general indices of collections. These relations might well serve in estimating the general influences on a firm's income in the future.

Published data on collection conditions.—There is much statistical data systematically published that bears upon a concern's collections and receipts from sales. If the above three conditions are taken as a general classification, within which influences arise that affect a customer's ability to pay, then one may assume a general series of relevant data available to any business enterprise, as follows:[6]

A. With respect to the movement of goods.

1. Department store sales.
2. Retail store sales.
3. Chain store sales.
4. Sales of wholesale houses.
5. Overstocks and shipments.
6. Indexes of retail and wholesale prices.
7. Freight movements.
8. Production.

B. With respect to buyers' ability to collect their receivables

1. Employment and wages.
2. Agricultural conditions.
3. Conditions as represented by data under *A* above that influence the buyers' income.
4. Bank debits to individual accounts.
5. Bank clearings.
6. Life insurance paid for.
7. Advertising.
8. Amusement receipts.
9. Business failures.

C. With respect to bank credit and the state of the investment market

1. Bank loans and deposits.
2. Bank reserves.
3. Interest rates.

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[6] Publications containing pertinent statistics: Federal Reserve *Bulletin;* Federal Reserve Banks *Monthly Business Reviews; Commercial and Financial Chronicle; Management and Administration; Dun's Review; Bradstreet's Review,* etc. *Cf.* Homer Vanderblue, "Problems in Business Economics," Part III, "Measurement of the Business Cycle."

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INDEX

A

Ability to pay, defined, 14, 15, 217
  evidence on, in credit interchange reports, 35
  information on, from risk direct, 29
  relation to, sources of information, 21, 22, 29
Acceptance, bank, 13
  trade, 13
Accountant, relation to credit men, 131-133
  viewpoint of, 131-133
Accounting, cost, 369-371
  data of, 142
  for budgeting, 368, 370
  phase of business control, 131
  use of, 134
Accounts payable, estimate for budgets, 400
  method of obtaining working capital, 333
  responsibilities for payment, 337
  use in ratios, 169, 171, 220, 245
Accounts receivable, estimates for budgeting, 399
  nature of, 135
  use in ratios, 222, 223, 245
  value of, 247-249, 253
Accruals, cost of, 335
  credit significance of, 333, 334
  method of borrowing, 335
  responsibility for payment, 337
  use of, in ratios, 171, 220, 245
Analysis, growth of ratio, 148
  proportional, 142, 143
Assets, arrangement of, 136-138
  "other," 224
  preserving liquidity of, 5
Assets current, items in, 222, 223
  meaning of, 222
  use in ratios, 219, 226, 245, 257, 283
  value of, 247
Assets fixed, earning of, 280
  expansion of, 95, 303, 371-373
  meaning of, 220
  relation to investment credit, 11
  relation to working capital, 254
  shoe industry, 235
  use in ratios, 219, 253, 283, 312

B

Bad-debt losses, in credit costs, 28
  in depression, 87
  normal, 28
Balance sheet, form of, 137-139
  nature of items, 134, 135
Bank credit, classed under commercial credit, 9
  distinguished from banking credit, 11
  increasing use in liquidation, 99
  in depression, 101, 102
  risks, 5
  supply of, in prosperity, 93
  use of, in depression, 102
Bank loans, demand for, 93
  in revival, 90
  limited, 93
Bank reserves, depletion of, 93
  in depressions, 87
Banks, coöperation with mercantile houses, 19
  customer's relation with, 24
  policy of, 119-121
  source of borrowing, 335, 337
  source of credit information, 18, 22, 23, 25
  testing credit, 334
Barometers of business, sources of, 108, 109
  use by credit man, 107
Bonds, in balance sheet, 247, 248
  included in ratios, 169, 172, 220
  method of borrowing, 173, 335
  responsibility for payment, 336
Budgeting, accounting data for, 370
  advantages to banks, 364
  aid to business control, 364, 365
  data for, 368, 370, 378
  plans for, 373
  problem of, 368, 380
  value of, 364
Budgets, aid to credit analysis, 136
  construction of expansion budget, 383
  control aspects, 392, 393
  departmentalization of, 393, 394
  expansion, 380, 383
  method of procedure, 395-402
  operating, 384, 385
  relation to credit, 363
  statement of problem, 394, 395

Business, control and budgeting, 364-368
dissimilar, mercantile and bank, 7
expenses cut in liquidation, 99
optimism, 90, 92
pessimism, 99
Business activity, curtailed, 94
stimulating influences in revival, 88
sustained in liquidation, 99
Business conditions, affecting credit risks, 70, 97, 98
data on, 79, 80
influence on creditor and debtor relations, 124-126
underlying credit reports, 42, 43, 46, 48, 57, 61, 64, 66, 70, 73, 74, 80
Business cycles, calculating working capital for, 348-350
credit interchange reports, 73, 80
credit risks related to, 70
defined, 85
demand and, 103, 104
differences in, 104
effect of, on expansion, 303-305
firm's reaction to, 106
illustrations of, 110-114
individual firms and, 374
influence on business items, 374
inventory valuation, 250, 251
measures of, 107, 108
phases of, 86, 88, 91, 98
prices on, 102, 103
production in, 103
relation of, to industry's cycle, 102
working capital requirements in, 346
Business enterprises, interrelation of, 115

C

Capital, distribution among assets, 219, 220
expansion and capital structure, 307-311
nature of, 218
productivity of, 279, 280, 281
sources of, 164, 165
structure and expansion, 307-311
territorial differences in supply, 123, 124
uses of, 217
Capitalization, excessive, 120
of income to test correctness of net worth, 168
Capital stock, methods of valuation, 166, 167
Case analysis, Electric Supply Co., 62-64
Hardware Co., 54-60
Jones Co., 74-84
Case analysis (*continued*)
Motor Co., 58-61
Plumbing Supply Company, 36-57
practical ratio, 177
Cash, buyers, 124
disbursements, 400, 401
dividends, 338
estimating of, 417
firm's lack of, 81
included in ratios, 223, 245
nature of, 135
resources, 101
terms, 259, 409
variations in, 253
Cash discounts, earning through, 117
relation to income, 421
size of, 420
terms, 45, 81, 408, 409
their significance, 46, 47
Character, basis of credit, 16
relation of, to sources of credit information, 23
Commercial paper houses, source of credit information, 20, 22, 23
Confidence, basis of credit, 14
Collections, conditions, 29, 390, 427, 428
correlation with income, 428
data on conditions, 429
estimates, 390-392
indexes of, 404, 405, 406
indicators, 404
litigation, 29
policy, 390
problem of, 407
safeguarding of, 96
Comparative analysis, advantages, 72
illustrated, 72-84
interchange reports, 68, 69
Construction activity, in depression, 86
in liquidation, 98, 99
in revival, 89
Contingent liabilities, statement of, 139
Costs, adjustment, 87, 100, 343
advantages of classifying, 388
amount of, 100
correlation with income, 391, 392
credit costs, 27
determinate, 345
graded, 350, 351
indeterminate, 346
of expansion, 379, 381, 382
overhead, 92, 350
prime, 92, 98, 347, 351
relation to business cycles, 348, 349
relation to prices, 91
relation to production, 91
segregation of, 378
sources of working capital, 335, 336
supplementary, 92, 350

Costs (*continued*)
trend of, 96, 100
working capital requirements, 346, 351
Cost accounting, data, 102, 134, 368, 378
phase of business control, 131
Credit, case in, 97, 98
entanglements, 95
general influences on, 3, 4
incidental factors influencing it, 107
in prosperity, 95
relation to budgets, 363
Credit clearing houses, joining of, 30
services rendered, 34
Credit cost, involved in securing credit information, 27, 28
promptly paying customers, 16
Credit experience, advantages, 34-38
methods of obtaining, 29, 30
relation to factors in credit risks, 34, 35
sources of, 29
Credit factors, ability to pay, 14, 15
manner or time of payment, 16, 17
productivity of capital and assets, 280, 281
rate of expansion, 302
sources and nature of capital, 164, 165
supply and position of working capital, 241, 242
uses and distribution of capital, 217, 218
willingness to pay, 15, 16
Credit granting, problem of, 3
Credit information, banks, 18-20
commercial paper houses, 20
mercantile agencies, 21
miscellaneous sources, 21
selection of sources for, 27
sources of, 17
valuating in relation to risk, 28
Credit instruments, protection of risks, 12-14
Credit interchange bureaus, charges, 33
joining of, 30
reciprocal reports, 33
types, 33, 34
Credit interchange reports, amount owing, 142, 143
amount past due, 43
analysis of headings, 39, 57, 69
business or subnumber, 39
comments, 49, 50
comparative analysis, 68, 69
highest credit, 41, 42,
how long sold, 40, 41
limitations of single reports, 67, 69
manner of payment, 46-49
Credit interchange reports (*continued*)
possibility of comparative analysis, 70-72
reflect business conditions, 70
relation to business cycles, 73
terms of sale, 45, 46
unfilled orders, 43, 44
Credit investigation, procedure, 17
Credit operations, classes of, 9, 10
commercial, 10
investment, 10, 11
overlapping of, 11, 12
Credit ratios, additional ratios on productivity, 285, 286
analysis of first factor in credit, 164
combination analysis, 174-177
department store, 182, 230, 262, 287, 318
distinguished from other ratios, 149
grouping of, 150
limit to number of, 149, 150
measure of fifth credit factor, 312-314
measure of first credit factor, 165, 170, 171, 172
measure of fourth credit factor, 280-284
measure of second credit factor, 219, 225, 226
measure of third credit factor, 241
measure of working capital requirements and control, 244, 245
measuring correctness of expansion, 316
objectives in use of, 150, 151
practical significance of, 149
relating to merchandise inventory, 252, 253
selection of, 151
shoe manufacturing concern, 199, 235, 270, 293, 323
silk manufacturing concern, 206, 236, 273, 295, 324
specialty metal manufacturing concerns, 212, 213, 238, 275, 298, 326
turnover, 257
wholesale grocery, 193, 223, 268, 291, 320
wholesale hardware, 187, 231, 266, 289, 319
Credit risks, business conditions, 70
comparison of mercantile with bank, 5-9
credit instruments, 12
elements of, 14-17
futurity in, 69, 70
nature of, 4
profits, 279
related to production process, 12
separation of good from bad, 125

Credit risks (*continued*)
supervision of, 101, 102
Creditors, controlling position of, 124
influence in depression, 125, 126
influence in prosperity, 125
Creditors' experience, ability to pay off risk, 22
difficulty of obtaining, 31
manner of payment of risk, 23
methods of obtaining, 29-35
willingness to pay off risk, 23
with risks, 20, 21
Credit worth, influence of bank policy on, 119
rate of interest, 120
size of line of credit, 119
term of credit, 120
use of funds, 120
influence of creditor policies, 115-119
in quantity of goods sold, 116
price policy, 118, 119
terms of sale offered, 116, 117
influence of creditor's financial positions, 121, 122
Current assets, items included, 222, 223, 245
turnover, 351-353
value of, 246, 247
Current assets: net worth ratio, construction of, 226
meaning of, 227
Current assets: total capital ratio, construction of, 222-224
department store, 230, 231
interpreting, 225
shoe manufacturing concern, 235
silk manufacturing concern, 237
specialty metal manufacturing companies, 239
wholesale grocery, 234
wholesale hardware, 231-233
Current debt: funded debt ratio, meaning and use, 314, 315
Current debt: net worth ratio, construction of, 173
meaning of, 173, 174
Current debt: total debt ratio, construction of, 171, 172
department store, 184, 188, 319
meaning of ratio, 122
shoe manufacturing concern, 201, 202, 323
silk manufacturing concern, 207, 324
specialty metal manufacturing comcern, 211, 213, 326
wholesale grocery, 194, 320
wholesale hardware, 190
Current liabilities, items included, 245
Current ratio, advantages of, 143
construction, 245
defined, 143
Current ratio (*continued*)
department store, 263, 319
interpretation of, 246
limitation of, 143-145
shoe manufacturing concern, 271, 323
silk manufacturing concern, 273, 325
specialty metal manufacturing companies, 276, 326
wholesale grocery, 269, 320
wholesale hardware, 266, 267
Customers, relations to bank and mercantile houses, 8, 9, 24-26
retaining of, 6
Cycle of firm, discovery of, 374
Cyclical trends, in business items, 374-378
in income, 377

D

Debt, analysis of total debt, 168, 169
Debts, reduction in liquidation, 99
Demand, changes in, 103, 104
Department store, analysis of credit ratios, 180-188, 230, 231, 263-265, 287-289, 318-320
credit ratios, 182, 230, 262, 287, 318
financial statements, 179-181
Depreciation, in value of inventory, 87
of assets in depression, 86
Depression, credit factors in, 87, 88
disparate trends in, 105, 106
outline of factors, 86, 87
Disbursements, estimating of, 387, 388, 401
summary steps in estimating, 389

E

Efficiency, decrease in, 92
growing in revival, 90
Employment, decreases, 98
in liquidation, 99
in revival, 89
Expansion, budget, 380, 381
calculating of, 371, 372
capital structure, 307-309
credit man's point of view on, 303
difficulties in determining rate, 303, 304
features of, 302, 303
in prosperity, 95
procedure in measuring, 305, 306
relation to current operations, 384
symptoms of overexpansion, 311, 312
timeliness of, 381, 382

F

Financial standards, use of, 218, 219
Financial statements, calculating ratios, 152

Financial statements (*continued*)
classification, 133, 134
department store, 179-181
form for analysis, 153-155
form for credit application, 136, 137
interpretation of items, 152-154
items grouped for analysis, 154, 155
limitation on analysis, 141, 142
other data for analysis, 135, 136
percentage method, 159, 160
purpose of analysis, 142
shoe manufacturing concern, 197, 198
significance in credit, 131-133
silk manufacturing concern, 202-205
specialty metal manufacturing concerns, 208-210
tendencies in analysis of, 145, 146
wholesale grocery, 191, 192
wholesale hardware, 185, 186
Fixed assets, meaning of, 220, 221
shoe industry, 235
Fixed assets: total capital ratio, construction of, 219, 220
department store, 230, 231
interpretation, 224, 227-229
shoe manufacturing concern, 235
silk manufacturing concern, 237
specialty metal manufacturing companies, 239
wholesale grocery, 234
wholesale hardware, 231-233
Forecast, range of, in budgeting, 379
Frozen credit, relation to credit risks, 16
Funded debt: fixed investment ratio, construction of, 226
department store, 230, 231
meaning of, 227-229
shoe manufacturing concern, 235
silk manufacturing concern, 238
specialty metal manufacturing companies, 239
wholesale grocery, 234
wholesale hardware, 231-233

G

Gross working capital, defined, 341

I

Income, analysis of stream, 409, 410
basis of, 408
checks and adjustments, 416
coördination with outgo, 390-392
estimating of, 389, 407
external variables, 411, 412
illustrated cases, 414, 416, 420
internal variables, 410, 411
nature of, 407, 408
Income (*continued*)
practical construction of indicator, 413, 418, 421
sales basis of expectancy, 390
Index, employment, 79
of business serviceable for credit analysis, 107
illustration of, 158, 159
number of ratios, 157, 158, 160-162
volume of manufacturers, 79
Indexes, construction of general collection, 405, 406
of business conditions, 377, 378
of collection, 404
general, of collection, 404, 405
Information, on business firm, 30
Interest rate, charged by banks, 120
force liquidation, 94
in depression, 86
in prosperity, 92, 94
in revival, 90
Inventory, affected by transportation, 123
and credit ratios, 252, 253
in prosperity, 95
valuation of, 248-251
Inventory: fixed assets ratio, construction of, 283
department store, 288, 289
meaning of, 284, 285
shoe manufacturing concern, 294
silk manufacturing concern, 196
specialty metal manufacturing companies, 300
wholesale grocery, 292
wholesale hardware, 289
Investment credit, operations, 10, 11

L

Legal information, credit, 29
Line of credit, size of, 119
Liquidation, credit factors in, 99-103
duration of, 100, 101
of debts, 86
of securities, 96
outline of factors, 98, 99
Loans, long time, in prosperity, 93
Losses, bad debt, 38
firm's ability to take, 100

M

Manner or time of payment, factor in credit risks, 16, 17, 29
Mercantile agencies, source of credit information, 21-24
Merchandise: receivables ratio, construction, 258
department store, 264, 265, 287
shoe manufacturing concern, 272, 294

Merchandise: receivables ratio (*continued*)
significance, 260
silk manufacturing concern, 274, 297
specialty metal manufacturing companies, 277, 300
wholesale grocery, 269, 291
wholesale hardware, 267, 289
Methods, duplication of, 32
illustrated, estimating income, 409
obtaining credit experience, 29-35
reasons for, in construction income index, 417
statistical, in statement analysis, 141, 142
Money market, curtailment of supply of funds in, 94
in liquidation, 100
tension in, 93, 96
Moral element in credit, willingness to pay, 15, 16

N

National Association of Credit Men, credit interchange bureau, 33
"Credit Monthly," 16
vi wpoint on credit, 97
Net earnings: net worth ratio, construction, 281, 282
department store, 288, 289, 320
limitation of, 282
meaning of, 284, 285
shoe manufacturing concern, 294, 323, 325
silk manufacturing concern, 296
specialty metal manufacturing companies, 299, 326
wholesale grocery, 292, 320
wholesale hardware, 289
Net sales: current assets ratio, construction, 257, 258
department store, 264-287
interpretation, 259, 260, 283, 284
shoe manufacturing concern, 272, 295
silk manufacturing concern, 274, 297
specialty metal manufacturing companies, 277, 300
wholesale grocery, 269, 291
wholesale hardware, 267, 289
Net working capital: fixed assets, changes in, 256
combination analysis with current ratio, 255, 256
construction and meaning, 253, 254
department store, 264
shoe manufacturing concern, 272
silk manufacturing concern, 274
specialty metal manufacturing companies, 276
wholesale grocery, 269
Net working capital: fixed assets (*continued*)
wholesale hardware, 267
Net sales: merchandise inventory ratio, construction, 257, 258
department store, 264-287
interpretation, 259, 260
shoe manufacturing concern, 272, 295
silk manufacturing concern, 274, 297
specialty metal manufacturing companies, 277, 300
wholesale grocery, 269, 291
wholesale hardware, 267, 289
Net sales: receivables ratio, construction, 257, 258
department store, 264-287
interpretation, 259, 260
shoe manufacturing concern, 272, 295
silk manufacturing concern, 274, 297
specialty metal manufacturing companies, 277, 300
wholesale grocery, 269, 291
wholesale hardware, 267, 289
Net working capital, meaning of, 332
significance of changing supply, 339, 340
Net worth, determination of, 166, 167
testing correctness of, 168
Net worth: fixed investments ratio, construction of, 225, 226
department store, 230, 231, 319
meaning of, 227-229
shoe manufacturing concern, 235, 236, 323
silk manufacturing concern, 237, 324
specialty metal manufacturing companies, 239, 326
wholesale grocery, 234, 320
wholesale hardware, 231, 233
Net worth: total debt ratio, construction of, 165, 166, 169
department store, 180-183, 319
interpretation of expansion, 314, 315
meaning of, 169
shoe manufacturing concern, 196, 200, 201, 323
silk manufacturing concern, 204, 205, 324
specialty metal manufacturing companies, 221, 213, 326
variations in, 169, 170
wholesale grocery, 194, 320
wholesale hardware, 188, 189
Normal growth, calculating of, 371
Normal net sales, methods of finding, 306, 307
Normal net sales: fixed assets ratio, department store, 319
method of deriving, 312-314
reasons for, 314

Normal net sales: fixed assets ratio (*continued*)
shoe manufacturing concern, 323
silk manufacturing concern, 324
specialty metal manufacturing companies, 328
wholesale grocery, 322

O

Other assets, meaning of, 224
Other assets: total capital ratio, construction of, 219, 224
department store, 230, 231
interpretation, 225, 227-229
shoe manufacturing concern, 235
silk manufacturing concern, 236
specialty metal manufacturing companies, 239
wholesale grocery, 234
wholesale hardware, 231-233
Outgo, coördination with income, 390-392

P

Payables, reduction in revival, 91
Physical volume of business, expansion of, 88
increase in prosperity, 91, 92
in depression, 86
in revival, 90
Prices, affecting statement items, 135
in liquidation, 100
in prosperity, 92
in revival, 89
nature of trend, 102, 103
of labor, 92
policy of, 118, 119
relative trends, 87, 89, 90, 91
selling, 94, 98
trend, 388
uneven trend, 94, 95
Production, adjusted to purchases, 385, 386
exceeds demand, 94
increase in, 94
nature of trend, 103
uneven in prosperity, 94
Productivity, criteria of potential, 279, 280
measures of, 280, 281
Profit and loss, form of account, 140, 141
Profits, credit risks, 279
decrease in liquidation, 98
increase in revival, 90
in cumulation of prosperity, 95, 96
paper, 249, 250
safeguarding, 5
source of, 7, 8
Prosperity, credit capacity in, 106
credit factors in, 95, 96
Prosperity (*continued*)
cumulative operation of, 91, 92
outline of factors, 92-94
Purchases, adjusted to production, 385, 386

R

Ratios, calculating, 152-163
financial, operating and credit compared, 149
interpretation in combination, 175-177
interpreting meaning of trends, 156, 157, 225
Raw materials and supplies: fixed assets ratio, constructive, 283
meaning of, 284, 285
silk manufacturing concern, 296
Receivables, collectibility in revival, 91
maturity of, 6
relation to merchandise, 258
turnover, 257
Reserves, handling, in ratios, 172
Revival, credit factors in, 90, 91
disparate trends in, 105, 106
outline of factors, 88-90

S

Sales, basis of income expectancy, 390, 408, 409
increase in volume, 95
Salesmen, checking credit, 31, 32
Seasonal factor, calculating of, 377
Securities, demand for, in depression, 87
issue of, in revival, 91
Shoe manufacturing concern, analysis of ratios, 196, 203, 235, 236, 270-272, 293-295, 323
credit ratios, 199, 235, 270, 293, 323
financial statements, 197, 198
Silk manufacturing concern, analysis of ratios, 203-207, 236-238, 273-275, 295-298, 324-326
credit ratios, 206, 236, 273, 295, 324
financial statements, 202-205
Solvency, in liquidation, 98
Sources of credit information, ability to pay, 21, 22
authenticity of, 22-24
banks, 18-20
classification of, 17, 18
commercial paper houses, 20
direct interview, 31
from debtors, 18
manner of payment, 23, 24
mercantile agencies, 21
miscellaneous, 21
related to factors in risks, 21-24, 28, 29
willingness to pay, 22, 23

Specialty metal manufacturing concerns, analysis of ratios, 207-215, 238-240, 275-278, 299-301, 326-329
credit ratios, 212, 213, 238, 275, 298, 326
financial statements, 208-210
Stock, extent of, in liquidation, 100
of goods in depression, 86, 87
of retail merchants in liquidation, 98
Subsidiary holdings, treatment of, 221, 222
Summary, approach to budgetary problem, 380
credit judgments, 329-331
estimating disbursements, 389
influences on debtor and creditor relations, 126-128
of steps in ratio analysis, 162, 163
steps in analyzing credit reports, 50, 84
steps in statistical basis for budgets, 378
working capital ratio analysis, 261, 262
Surplus, analysis of, 167, 170
Surplus: net worth ratio, construction of, 171
department store, 184, 319
interpretation in expansion, 315
meaning of, 171
shoe manufacturing concern, 201, 323
silk manufacturing concern, 205, 206, 324
specialty metal manufacturing concerns, 211, 213, 326
wholesale grocery, 194, 320
wholesale hardware, 189, 190

T

Term of credit, adjustment to turnover, 126
extended to banks, 120
Terms of sale, basis of income estimates, 409, 410
defined, 45, 46
offered in mercantile credit, 116, 117
Tests, of credit sources, 27
Total capital, items in, 219, 220
Trade, conditions, 29, 30
credit, reliance on, 95
Trade credit bureaus, joining of, 30
limited scope, 32, 33
services rendered, 34
Transportation, factors in credit, 123
Turnover, and business vicissitudes, 354-356
coördination with terms of sale, 126
credit ratios of, 257
Turnover (*continued*)
different rates, 122, 123
factors affecting, 353, 354
interpretation of ratios, 259, 260
meaning of, 243, 244
working capital assets, 351-353

U

Unfinished and finished goods: fixed assets ratio, construction, 283
meaning of, 284, 285
silk manufacturing concern, 297
Use of funds, scrutinized by banks, 120

V

Valuation, inventory, 249-251
investments, 253
items in balance sheet, 134, 135
receivables, 251
Volume of business, in liquidation, 98

W

Wall, Alexander, experiences of, 146-148
Weak enterprises, in depression, 86, 87
Willingness to pay, factor in credit risks, 15, 16, 29
Wholesale grocery, analysis of ratios, 190-195, 233, 234, 268-270, 291-293, 322, 323
credit ratios, 193, 233, 268, 291, 320
financial statements, 191, 192
Wholesale hardware concern, analysis of credit ratios, 188-190, 232, 233, 266-268, 289-291
credit ratios, 187, 231, 266-268, 291
financial statement, 185, 186
Working capital, calculating needs, 342-344
classification of needs, 344
combination analysis of ratios, 261
costs, 347
costs and requirements in business cycles, 346
costs and sources, 335, 336
credit significance of sources, 333, 334
department store ratios 262
determinate needs, 345, 346
differences in requirements, 242
estimating requirements, 347-350
factors in requirements, 340
guiding principles in estimating requirements, 360-362
indeterminate needs, 346
management and requirements, 244
measures of efficient use of, 256
minimum needs, 359, 360
principles of management, 357

Working capital (*continued*)
proportion of owned, to borrowed, 359
reasons for borrowing, 357
relation between volume and turnover, 242, 243
responsibility for repayment, 336
Working capital (*continued*)
sources of, 332, 333, 334, 335
turnover, 257, 351-353
use of, 351
variation in net supply, 337, 338
Working funds, continuous flow of, 406, 407